
# DRUG FORMULARY

*6th edition*

Universiti Kebangsaan Malaysia
National University of Malaysia
*Department of Pharmacy*

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# PREFACE

The PPUKM Drug Formulary, 6th edition, is a publication of the Pharmacy Department. The positive feedback from nurses, pharmacists and doctors across the country has been encouraging as we continue to strive to provide a useful rapid reference to all healthcare professionals regarding the medications available in our hospital.

Having been through a thorough scrutinious checking of correct dosage forms, correct strengths, updated dosage information, current policies set by the Drugs and Therapeutics Committee, administration method, this book is hoped to guide doctors, pharmacists and nurses in their appropriate medicines use and to address frequently asked questions in daily clinical practice.

The general structure and format remain unchanged. However in this edition, we have added information on time of administration ( before or after food), as well as organized the chapters according to the international standard of WHO Anatomical Therapeutic Chemical (ATC) classification Indexing System. In this system, the active substances are divided according to the organ or system on which they act and their therapeutic, pharmacological and chemical properties.

Drugs are classified to 5 different levels:
*a) 1st level: fourteen main groups *(pls see next page)*
*b) 2nd level: pharmacological/therapeutic subgroups*
*c) 3rd and 4th levels: chemical/pharmacological/therapeutic subgroups*
*d) 5th level: chemical substance*

The complete classification of metformin illustrates the structure of the code:

| | |
|---|---|
| A | **Alimentary tract and metabolism**<br>(1st level, anatomical main group) |
| A10 | **Drugs used in diabetes**<br>(2nd level, therapeutic subgroup) |
| A10B | **Blood glucose lowering drugs**, excl. insulins<br>(3rd level, pharmacological subgroup) |
| A10BA | **Biguanides**<br>(4th level, chemical subgroup) |
| A10BA02 | **metformin**<br>(5th level, chemical substance) |

For the purpose of this formulary, we have classified up to the third level.

We hope you will be satisfied with this Formulary. However we continuously strive to improve. We welcome all comments as feedbacks are essential in perfecting our newly improved edition.

*Michelle Tan Hwee Pheng*
*Izyan Diyana Ibrahim*
**Chief Editors**
**Drug Information Pharmacist**

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Last but not least, to all Consultants, Specialists and members of the Drug and Therapeutics Committee who have rendered their advice and comments, we greatly appreciate your input and contribution.

*Teamwork divides the tasks and doubles the success.*

**Together Everyone Achieves More.**

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| | A04 | Antiemetics And Antinauseants | |
| | A05 | Bile And Liver Therapy | |
| | A06 | Laxatives | |
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| | D06 | Antibiotics & Chemotherap. For Dermatological Use | |
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| | D08 | Antiseptics And Disinfectants | Mah Suit Wan<br>Liyana Saharuddin |
| | D09 | Medicated Dressings | |
| | D10 | Anti Acne Preparations | |
| | D11 | Other Dermatological Preparations | |

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| | H03 | Thyroid Therapy | |
| | H04 | Pancreatic Hormones | |
| | H05 | Calcium Homeostasis | |
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| | J02 | Antimycotics For Systemic Use | |
| | J04 | Antimycobacterials | |
| | J05 | Antivirals For Systemic Use | Pau Kiew Bing<br>Sarah Anne Roberts |
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| | L04 | Immunosuppressive Agents | |
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| | M05 | Drugs For Treatment Of Bone Diseases | |
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| | N07 | Other Nervous System Drugs | |
| Class P<br>Antiparasitic, Insecticides & Repellants | P01 | Antiprotozoals | Michelle Tan Hwee Pheng<br>Lau Chee Lan |
| | P02 | Anthelmintics | |
| | P03 | Ectoparasiticides, Incl. Scabicides, Insect & Repel. | |
| Class R<br>Respiratory System | R01 | Nasal Preparations | Sarah Anne Roberts<br>Aisya Nabilah |
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| | R05 | Cough And Cold Preparations | |
| | R06 | Antihistamines For Systemic Use | |
| | R07 | Other Respiratory System Products | |
| Class S<br>Sensory Organs | S01 | Ophthalmologicals | Ong Ee Yan<br>Ivy Mok Pooi Wan |
| | S02 | Otologicals | |
| | S03 | Ophthalmological And Otological Prep | |
| Class V<br>Various | V03 | All Other Therapeutic Products | Izyan Diyana/Lydia Gan |
| | V04 | Diagnostic Agents | Dexter Van Dort/Michelle |
| | V07 | All Other Non-Therapeutic Products | Shariffah Norasmah |

## **ABBREVIATION** and markings used in this publication:

| | |
|---|---|
| °C | Celsius degree |
| -G | Generic |
| x/daily | x times daily |
| ADR | Adverse drug reaction |
| Admin | Administration |
| BNF | British National Formulary |
| BP | Blood pressure |
| BTS | Bandar Tasik Selatan |
| b.w | Body weight |
| CABG | Coronary artery bypass graft |
| C/I | Contraindication |
| Cap | Capsule |
| CrCL | Creatinine clearance |
| cm | Centimetre |
| Conc. | concentration |
| COX-2 | Cyclooxygenase-2 |
| D5 | D5 Dextrose/Glucose 5% infusion |
| DD | Dangerous Drug |
| DM | Diabetes mellitus |
| DVT | Deep vein thrombosis |
| ECG | electrocardiogram |
| EOD | Every other day |
| Esp. | Especially |
| etc | Et cetera/ other things |
| EX | Extemporaneously prepared |
| FSH | follicle-stimulating hormone |
| GERD | Gastroesophageal reflux disease |
| GI | Gastrointestinal |
| HR | Heart rate |
| HRT | Hormone replacement therapy |
| Hr/hrs | Hours |
| ICU | Intensive care unit |
| IM | Intramuscular route |
| Inj | Injection |
| INR | international normalized ratio |
| iu | International unit |
| IV | Intravenous route |
| IVI | Intravenous infusion |
| kg | kilogram |

| | |
|---|---|
| LD | Loading dose |
| LH | luteinizing hormone |
| max | Maximum |
| mcg | Microgram |
| mg | miligram |
| MI | Myocardial infarction |
| min | Minutes |
| mL | mililiter |
| mo | Months old |
| mths | Months |
| NS | Normal saline |
| NSAID | nonsteroidal anti-inflammatory drug |
| NSTEMI | Non-ST elevation myocardial infarction |
| NYHA | New York Heart Association |
| om | Once every morning |
| ON | Once at night |
| PE | Pulmonary embolism |
| PO | Per orally |
| PPP | Pusat Perubatan Primer |
| prn | When needed/when required |
| PSY | Psychiatric |
| Pts | Patients |
| q6h/qxh | Every 6 hourly or every x hourly |
| RA | Rheumatoid arthritis |
| RS | Ringer's solution or compound sodium chloride solution |
| S/E | Side effects |
| SC | Subcutaneous route |
| secs | Seconds |
| SR | Sustained release |
| Stat | immediately |
| STEMI | ST elevation myocardial infarction |
| Supp. | Suppository |
| SVT | Supraventricular tachycardia |
| Tab | Tablet |
| USG | Ultrasonography |
| w/v | weight (of solute) per volume (of solvent) |
| WFI | Water for injection infusion solution |
| wks | weeks |
| yo | Year, years old in age indication |

# NEW PREPARATIONS approved by JKTU in 2013

| | New preparations approved | Brand name |
|---|---|---|
| 1 | *Hemato and Neuro Polyvalent Snake Antivenom 1mL Injection* | - |
| 2 | *Efavirenz 600mg Tab* | STOCRIN ® |
| 3 | *Rivaroxaban 15mg & 20mg Tab* | XARELTO® |
| 4 | *Alteplase 50mg Injection* | ACTILYSE ® |
| 5 | *Telmisartan 40mg/Amlodipine 5mg tablet, 80mg/5mg tablet, 80mg/10mg tablet* | Twynsta ® |
| 6 | *Fingolimod 0.5mg Capsule* | GILENYA ® |
| 7 | *Controlled-release elemental Iron 105mg + Vitamin C 500mg + Vitamin B Complex + Folic Acid* | IBERET FOLIC- 500 ® |
| 8 | *Lacosamide 50mg, 100mg & 150mg Tablets* | VIMPAT® |
| 9 | *Benzydamine HCL 3mg/ml Throat Spray, 15ml (90 sprays)* | DIFFLAM FORTE SPRAY ® |
| 10 | *Ustekinumab 45mg/0.5ml PFS* | STELARA® |
| 11 | *Tenofovir Disoproxil Fumarate Tablet 300mg* | TENVIR TABLET |
| 12 | *Immune Globulin Subcutaneous* | HIZENTRA® |
| 13 | *Buprenorphine 5mcg/hr Trandermal Patch Buprenorphine 10mcg/hr Transdermal Patch* | SOVENOR® |
| 14 | *Low Molecular Weight Iv Iron Dextran 100mg per ampoule (2ml)* | COSMOFER® |
| 15 | *Trastuzumab powder in 440mg multidose vial containing powder for concentrate for solution for infusion* | HERCEPTIN® |

# APPENDIX 1

## MEASUREMENTS

### 1.1 CREATININE CLEARANCE ESTIMATING METHODS

**Dosage adjustment in Renal Impairment Adults (>18yo):**
Adjustments should be made using the glomerular filtration rate (GFR) by calculating the estimated creatinine clearance:

$$\text{Estimated } Cl_{CR} \text{ (mL/min)} = \frac{(140 - \text{age}) \times Wt}{S_{CR}} \times 1.23 \text{ (M) or } 1.04 \text{ (F)}$$

Where $S_{CR}$ = Serum creatinine in μmol/L
Wt = Body weight in kg
M = for Male
F = for Female

**(Children 1-18yo): Schwartz equation[1]**

$$\text{Estimated } Cl_{CR} \text{ (mL/min/1.73m}^2\text{)} = \frac{K \times Ht \text{ (cm)}}{S_{CR} \text{ (mg/dL)}}$$

where $S_{CR}$ = Serum creatinine in mg/dL
( 1μmol/L = 0.0113 mg/dL)
Ht = Height (length) in cm
K = constant of proportionality that is age-specific

- < 1 year preterm : K = 0.33
- < 1 year fullterm : K = 0.45
- 1 - 12 years : K = 0.55
- >12 years(female) : K = 0.55
- >12 years(male) : K = 0.7

**(Infants):** Estimation of creatinine clearance using serum creatinine and body length (to be used when an adequate timed specimen cannot be obtained).**This formula may not provide an accurate estimation of creatinine clearance for infants younger than 6 months old** of age and for patients with severe starvation or muscle wasting. Calculated $Cl_{CR}$ is not reliable but it may be helpful as a guide to dosage adjustment

$$\text{Estimated } Cl_{CR} \ (mL/min/1.73m^2) = \frac{30 \times Ht\ (cm)}{S_{CR}\ (\mu mol/L)}$$

Reference:

**1.** American Pharmacist Association. *Drug Information Handbook: A Comprehensive Resource for all Clinicians and Healthcare Professionals*. 22nd Ed. 2013. United States of America. Lexi-com Inc. p.2037

## 1.2 BODY SURFACE AREA FORMULA (ADULT & PAEDIATRIC)

$$BSA\ (m^2) = \sqrt{\frac{Ht\ (cm) \times Wt\ (kg)}{3600}}$$

## 1.3 IDEAL BODY WEIGHT CALCULATION

**Adults (>18yo) (IBW is in kg)**

- $IBW\ (M) = \left(2.3 \times \frac{(ht-152)}{2.5}\right) + 50$
- $IBW\ (F) = \left(2.3 \times \frac{(ht-152)}{2.5}\right) + 45.5$

**Children (IBW is in kg; Height in cm)**

- **1-18yo:** $IBW = \frac{Ht^2 \times 1.65}{1000}$
- **> 5 feet:** $IBW\ (M) = 39 + \left(2.3 \times \frac{Ht-152}{2.5}\right)$

  $IBW\ (F) = 42.2 + \left(2.3 \times \frac{Ht-152}{2.5}\right)$

## 1.4 ADJUSTED BODY WEIGHT

**Adults ( 18 yrs and older)**

ABW=IBW + 0.4 (actual body weight – IBW)

## 1.5 BODY MASS INDEX (BMI)

$$BMI = \frac{weight\ (kg)}{height\ (m)^2}$$

## 1.6 Apothecary/Metric Equivalents

### Liquid Measures

1 fluid ounce = 30mL
1 pint = 16 fluid ounces = 480ml
1 teaspoonful = 5mL
1 tablespoonful = 15mL
1cc= 1 mL

### Weights

1 oz = 30g
1kg = 1000g
1kg = 2.2lb
1g = 1000mg
1mg = 1000mcg (µg)
1mcg = 1000 nanogram

### OTHERS

Eye drops 1mL = 20 drops
1 drop = 0.05mL
Vitamin D 100 IU = 2.5mcg
Milimoles = $\frac{\text{weight of substance (mg)}}{\text{Molecular weight of subs (mg)}}$

## APPENDIX 2

| *Drug* | *Administration* | *Dilution* | *Sampling time* | |
|---|---|---|---|---|
| | | | *Pre* | *Post* |
| Vancomycin<br><br>*Sample after 3rd dose* | IV infusion<br><br>a)500mg = run 1 hr<br><br>b)>500-1200mg = run 2 hrs | Reconstitute 1 vial (500mg) with 10ml WFI<br>Dilution: 500mg in 100ml NS<br>>500mg in 200ml NS<br><br>Infuse over 1 – 2 hours | Just before dose | 1 hour after complete 1 hour infusion |
| Gentamicin/ Netilmicin/ Amikacin<br><br>*Sample after 3rd dose* | Conventional Dosing | Gentamicin:<br>Dilute in 100-200mL NS or D5%<br>Infuse over 1 hour<br><br>Amikacin:<br>Dilute 500mg in 100mL NS<br>>500mg in 200ml NS<br>Infuse over 1 hour | Just before dose | 1 hour after dose (IV bolus)<br>At the end of 1 hour infusion (IV infusion) |
| | Once Daily Dosing | | Just before dose | At the end of 1 hour infusion or as ordered |
| Theophylline<br><br>(For IV, aminophylline)<br><br>*Oral: Sample after at least 1 day of therapy* | IV Bolus | For IV infusion:<br>Dilute 500mg in 500ml NS. To titrate rate of infusion<br><br>Infusion rate:<br>0.36 ***mg/kg/min*** to max 25 ***mg/min***<br><br>IM administration is not recommended. | 30 mins after end of 30 min infusion | |
| | IV infusion | | 12-24hrs post loading | |
| | PO, liquid/ fast-released tab | N/A | Just before dose | 2 hour post dose |
| | PO, slow-release | | Just before dose | 4 hour post dose |
| Phenytoin<br><br>*To sample:*<br>*With loading dose: 2-4 hrs post dose*<br><br>*No loading dose: After 2-3 days of initiation* | IV or Oral | IV Bolus: no need to dilute<br><br>IV infusion<br>Loading dose: Dilute 20ml (1000mg) in 100mL of NS<br>(max conc=10mg/mL)<br><br>Bolus & infusion rate <50mg/min | Just before dose | - |
| Digoxin<br><br>*To sample:*<br>*With loading dose: >6 hrs post dose*<br><br>*No loading dose: 5-7 days after dose* | IV or Oral | IV:<br>Can be administered undiluted or diluted with a 4-fold or greater volume of diluent. Dilute amount required up to 50-500ml N/S or D5%<br><br>Infuse over at least 2 hours | Just before dose OR >6 H post dose | |

***UPDATES:***

- *For vancomycin, only pre level is required.*
- *For dialysis (HD,CVVH,SLEDD), to note down time of start/end procedure under drug & dose column*
- For Aminoglycosides, **post level to be taken at the end of 1 hour infusion** ( not 1/2 hr after 1/2 hr infusion
- For vanco, new target trough level is **6.9-13.8 umol/l**

***ATTENTION*** *: Please note that it is important to record down the* ***exact dosing time and sampling time*** *into the form provided to avoid any misinterpretation of results. Please check with pharmacist for dilution in fluid restriction cases.*

## APPENDIX 3

## EQUIANALGESIC CONVERSION RATIO

Please use this conversion table with caution. There are currently no universally accepted guidelines for equianalgesic conversion. A common practice is to reduce the initial converted dose by **25% to 50%** due to incomplete cross-tolerance. Frequent reassessment of pain control is necessary to avoid overdosing or under dosing.

Recommendation

- Opioid switching should be considered when side effects limit further dose escalation of a particular opioid.
- Conversion from one opioid to another between different routes of administration should be guided by equianalgesic conversion ratio.

**OPIOID CONVERSION RATIO**

DIVIDE

| *TO* / **FROM** | *Codeine mg/day* | *Oral morphine mg/day* | *SC morphine mg/day* | *Oxycodone mg/day* | *Fentanyl TD mcg/h* |
|---|---|---|---|---|---|
| **Oral codeine mg/day** | | 8 | 20 | 12 | 24 |
| **Oral morphine mg/day** | 8 | | 2.5 | 1.5 | 3 |
| **SC morphine mg/day** | 20 | 2.5 | | 0.6 | 1.2 |
| **Oxycodone mg/day** | 12 | 1.5 | 0.6 | | 2 |
| **Fentanyl TransDermal mcg/h** | 24 | 3 | 1.2 | 2 | |

MULTIPLY

## APPENDIX 3 OPIOID ANALGESICS

Note: Instructions for using conversion table
This conversion chart should only be used as a guide and treatment must be individually tailored for patients based on clinical assessment.

1. **Add current opioid dose to get total dose mg per 24 hours** (for fentanyl, note the total hourly rate in mcg).
2. **Begin at the left hand column to identify the currently used opioid.**
3. *Select the alternative opioid from the top row.*
4. Identify the box where the column and row intersect and determine the conversion factor to divide or multiply in order to obtain 24 hours dose of the alternative opioid.
5. **Divide 24 hours dose according to dosing frequency required** (examples BD dosing divide by 2 ; 4-hourly dosing divide by 6).

*Source: CPG: Management of Cancer Pain 2010*

## APPENDIX 4:

### A) SAFE TO TAKE
**(but only in normal therapeutic dose)**

- Acetaminophen
- Acetophenetidin
- Acetylsalicylic Acid (Aspirin)**
- Aminopyrine (Amidopyrine)*
- Antazoline (Antistine)
- Antipyrine **
- Ascorbic Acid (Vitamin C)*
- Benzhexol (Artane)
- Chloramphenicol **
- Chlorguanidine (ProguaniL, Paludrine)
- Chloroquine**
- Ciprofloxacin **
- Colchicine
- Co-Trimoxazole (Trimethoprim/Sulfamethoxazole) **
- Diphenhydramine
- Dipyrone(Metamizole) **
- Glibenclamide (Glyburide) **
- Isoniazid
- Isosorbide Dinitrate **
- L- Dopa
- Menadione Sodium Bisulfite
- Menapthone
- Mepacrine **
- Nalidixic Acid **
- Norfloxacin **
- P- Aminobenzoic Acid
- Phenylbutazone
- Phenytoin
- Probenecid*
- Procain Amide Hydrocloride*
- Pyrimethamine
- Quinidine*
- Quinine**
- Streptomycin
- Succimer (Dimercaptosuccinic Acid) **
- Sulfacetamide **
- Sulfacytine
- Sulfadiazine
- Sulfaguanidine
- Sulfamerazine
- Sulfamethoxypyridazine
- Sulfanilamide **
- Sulfasalazine **
- Sulfisoxazole**
- Trimethoprim
- Tripelennamine
- Vitamin K*

## B) CAUTION or to AVOID

| Drug Group | CAUTION | AVOID |
|---|---|---|
| ***Analgesics/ Antipyretics*** | Acetaminophen/paracetamol antipyrine**, Aspirin**, | Acetanilid, acetophenetidin (phenacetin), amidopyridine*, probenecid, pyramidone |
| ***Antimalarials*** | Chloroquine**, quinine**, | Hydroxychloroquine, pentaquine, primaquine, quinocide |
| ***Cytotoxic/ Antibacterial*** | Quinolones, Sulfadiazine, Silver Sulfadiazine, Chloramphenicol**, Co- trimoxazole** , Nalidixic acid** | Furazolidone, furmethonol, nitrofurantoin, para-aminosalicylic acid |
| ***Cardiovascular drugs*** | Enalapril, Isosorbide Dinitrate/Mononitrate | Procainamide, quinidine |
| ***Sulfonamides/ Sulfones*** | Sulfacetamide**, Sulfanilamide**, Sulfasalazine** sulfisoxazole** | Dapsone, sulfamethoxypyrimidine, sulfapyridine |
| ***Miscellaneous*** | Aniline dyes, Mefedine, Propoxyphene, | Alpha- methyldopa, ascorbic acid, dimercaprol (BAL), hydralazine, mestranol, methylene blue, naphthalene, nitridazole, phenylhydrazine, toluidine blue, trinitrotoluene, urate oxide, vitamin K* (water soluble), procarbazine, pyridium, quinine, rasburicase. |

## C) FOODS TO AVOID

Fava beans (few also avoid red wine, all legumes, blueberries [and yogurts containing these], soya products, tonic water, camphor), 100% pearl powder**

* These drugs appear in both lists. Most prefer to avoid them altogether. If patient is taking them, please ensure they are in **normal therapeutic doses**.

** updated data on 2013. *Source: "Medications and Glucose-6-Phosphate Dehydrogenase Deficiency, an evidence-based review" in Drug Saf 2010; 33(9):713-726.*

*Source:*
*1) Ernest Beutler, M.D. Prof. Lucio Luzzato, Prof. P. Marradi, Italian Health Ministry*
*2) Lexi-Comp*
*3) Micromedex*
*Source: (quoted from Ernest Beutler, M.D., "Glucose-6-Phosphate Dehydrogenase Deficiency," in Erythrocyte disorder: Anemias due to increased destruction of erythrocytes with enzyme deficiencies, p.598)*

# CLASS A. ALIMENTARY TRACT AND METABOLISM

## A01 STOMATOLOGICAL PREPARATIONS

| **BENZYDAMINE (DIFFLAM SOLUTION/ DIFFLAM FORTE SPRAY)** | |
|---|---|
| Prep<br>Policy | Benzydamine HCl 0.15%, 100 mL;<br>Throat spray 3mg/mL, 15mL (90 sprays)(A: Specialist only) |
| Dose:<br>*For the Relief of Painful Conditions of Mouth and Throat including: Tonsillitis, Sore throat, Radiation Mucositis, Mouth Ulcers, Post Orosurgical and Periodontal.* Gargle/ Oral rinse: **Adult** 15mL undiluted to rinse/ gargle for at least 30 secs orally 1 ½ to 3 hourly intervals, for not more than 7 days; **Child** 5-15 mL<br>*In patient who cannot gargle:* Throat spray: **Adult** >12 yr 2-4 sprays; **Child** 6-12 yr 2 sprays. Repeat every 1 ½ to 3 hrs prn, for not more than 7 days. | |
| Admin | Solution: Use undiluted, but if stinging occurs it may be diluted with water. Hold in the mouth for at least 30 secs then expelled from the mouth after use. Not to swallow.<br>Throat spray: Spray directly onto sore/inflamed area & swallow gently |
| Notes | • Not recommended in children under 6 years of age. |

| **CHOLINE SALICYLATE & CETALKONIUM (BONJELA-G)** | |
|---|---|
| Prep | Choline Salicylate 8.7% & Cetalkonium 0.01%, Gel 15g |
| Dose:<br>*For Teething and Mouth Ulcers caused by braces and denture*: Topical: **Adult** one cm gel; **Child** >4 months: 1/2 cm of gel onto the sore area. Max 6 doses in 24 hrs. | |
| Admin | Apply 3 hourly when needed to sore area. |
| Notes | • Not suitable for infants < 4 months or patients with history of salicylate sensitivity. |

| **THYMOL COMPOUND GARGLE-G** | |
|---|---|
| Prep | Solution, 60mL |
| Dose:<br>*For poor oral hygiene:* Gargle/ mouth wash: To be diluted 1 part with about 3 parts of warm water. Use as gargle or mouthwash, 3-4 times/per day | |
| Admin | Use diluted liquid, rinse/ gargle for 30 secs. Then expel the liquid. Do not swallow. |
| Notes | • Contraindicated in young children and infants |

| **TRIAMCINOLONE ACETONIDE (KENALOG-G )** | |
|---|---|
| Prep | Dental paste 0.1%, 5g |
| Dose:<br>*Adjunctive treatment and temporary relief of symptoms associated with non-herpetic, oral inflammatory and ulcerative lesions such as recurrent ulcerative stomatitis, denture stomatitis, gingivitis*: Topical: Apply about ½ cm 2-3 times/ day to oral lesion. | |
| Admin | At bedtime or after  .Paste should be pressed, not rubbed, on the lesion to prevent granular, gritty sensation. |
| Notes | Contraindicated in herpetic lesions of known viral origin such as herpes labialis, intraoral lesions such as primary herpetic gingival stomatitis. |

# A02 DRUGS FOR ACID RELATED DISORDERS

## A02 i) ANTACIDS

**Ulcer/ Non-ulcer Dyspepsia, Reflux Oesophagitis**

- Antacids are a cheap & effective symptomatic treatment for dyspepsia, heartburn & gastro-oesophageal reflux disease (GERD).
- Interaction – antacids should preferably not to be taken at the same time as other drugs since they may impair absorption (esp. Lithium, Azithromycin, Digoxin, Rifampicin, Tetracyclines, Chloroquine, Phenytoin, Biphosphonates (Alendronate etc)- advise not to take antacids within 1 -3 hours of these medications ; Antacids may also damage enteric coatings of tablets.
- S/E: Mg salts tend to be laxative and Al salts may cause constipation.
- Simethicone (activated Dimeticone) is added to antacids as antifoaming agent to reduce flatulence.

| **ACTIVATED DIMETHICONE (DENTINOX)** | |
|---|---|
| Prep | Colic Drops Syrup 21mg/2.5mL, 100mL |
| Dose:<br>*Prior to gastroscopy & Xray examination (Treatment of all types of excessive gas accumulation or formation in the GIT eg: flatulence):* Syrup: Refer to endoscopy. **Babies and infants** 1/2 teaspoon in the bottle or after each feed (max. 6 doses per day)**.** | |
| Admin |  |

| **MAGNESIUM TRISILICATE MIXTURE (MMT-G)** | |
|---|---|
| Prep | Magnesium Trisilicate 3.33% w/v, Light Mg Carbonate 3.33% w/v, Sodium Bicarbonate 3.33% w/v (Solution 120mL) |
| Dose:<br>*For symptomatic relief of gastric hyperacidity, indigestion, heartburn, dyspepsia, and hyperacidity associated with gastric and duodenal ulcers:* PO: 15 mL 3-4 times/ day or as required | |
| Admin | Between  with water |
| Notes | Side effect of diarrhoea; belching due to liberated carbon dioxide; silica-based renal stones reported on long-term treatment. |

| **MAGNESIUM TRISILICATE & ALUMINIUM HYDROXIDE (GELUSIL-G)** | |
|---|---|
| Prep | Tablet Mg Trisilicate 250mg & Al Hydroxide 120mg |
| Dose:<br>1. *For symptomatic relief of stomach upset associated with hyperacidity (heartburn, acid indigestion and sour stomach) 2. Hyperacidity associated with gastric and duodenal ulcers 3. Symptomatic treatment of GERD*: PO: **Adult:** 1-2 tab; **Child** > 6yo: ½ to 1 tablet. | |
| Admin | Chew after/ between  and at bedtime. Followed by a ½ glass of water. Do not swallow whole |

## A02 ii) H2-ANTAGONIST/ PROTON PUMP INHIBITOR

**Duodenal/ Benign ulcers; Reflux oesophagitis; Zollinger-ellison**

- **Helicobacter Pylori Eradication** - Suggested 1 to 2 week regimen (depending on physician).
- **1st Line: Initial therapy**: One week **triple-therapy regimens** that comprise a Proton pump inhibitor (eg Omeprazole, Esomeprazole, Pantoprazole), Amoxicillin (1g 2 times/day) and Clarithromycin (500mg 2 times/day), eradicate H. pylori in about 85% of cases. There is normally no need to continue antisecretory treatment unless ulcer is complicated by haemorrhage or perforation.
- **2nd Line: Sequential therapy** may improve eradication rates, especially with clarithromycin resistant strains. This 10-day regimen involves giving
  a) Pack 1 (5 days): a PPI (Pantoprazole 40mg/ Esomeprazole 20mg) 2 times/day and Amoxicillin (1 g 2 times/day), followed by
  b) Pack 2 (for another 5 days): a PPI (Pantoprazole 40mg/ Esomeprazole 20mg) 2 times/day plus Clarithromycin (500 mg 2 times/day) and Metronidazole (400 mg 2 times/day)

- Caution: H2-receptors & proton pump inhibitors should be used with caution in hepatic impairment, renal impairment, pregnancy & in breast-feeding.
- Initial short course of a proton pump inhibitor is the treatment of choice in gastro-oesophageal reflux disease (GERD).
- Patients confirmed erosive ulcerative, stricturing esophagitis usually need to be maintained on a proton pump inhibitors.

| **CIMETIDINE (TAGAMET-G)** | |
|---|---|
| Prep | Tab 400mg |
| Dose:<br>**Adult** *Duodenal or benign gastric ulceration:* PO: 400mg 2 times/day (with breakfast and at night) or 800mg at night for at least 4 wk (6 weeks in benign gastric ulcer, 8 weeks in NSAID-induced lesions). Maintenance: 400mg at bedtime. *Oesophageal reflux disease:* PO: 400mg 4 times/day for 4-8 wk. *Zollinger-Ellison Syndrome:* PO: 400mg 4 times/ day. *Prophylaxis of haemorrhage from stress ulceration in seriously ill patients:* PO: 200-400mg every 4-6 hrs; **Child** 1-12 years 25-30mg/kg/day in divided doses; **Infant** <1 year 20mg/kg/day in divided dose (not fully evaluated). | |
| Admin | Avoid excessive alcohol. Take 1hr before or 2 hr after antacids. |
| Notes | Cimetidine should be avoided if problems exist with confusion in the elderly or drug interactions (enhanced effect: warfarin-type anticoagulants, antiarrhythmics, carbamazepine, ciclosporin, phenytoin, and theophylline). |

| **ESOMEPRAZOLE (NEXIUM)** | |
|---|---|
| Prep<br>Policy | Tab 20mg & 40mg (A*: Gastroenterologist, Surgeons, ENT specialists and Patients on Ryle's tube) & Inj. 40mg (A*: 1. For acute bleeding- Consultants only; 2.Prevention of rebleeding of gastric and duodenal ulcers- Gastroenterologists only) |
| Dose:<br>*GERD: Treatment of erosive reflux esophagitis*: PO: 40mg once daily for 4 wks. Additional 4wks treatment is recommended for patients in whom esophagitis has not healed or who have persistent symptoms. *Long term management of patients with* | |

| | |
|---|---|
| *healed esophagitis to prevent relapse*: PO: 20mg once daily. *Symptomatic treatment of GERD (in patients without esophagitis):* PO: 20mg once daily. If symptoms control has not been achieved after 4wks, the patient should be further investigated. Once symptoms have resolved, subsequent symptoms control can be achieved using an on demand regimen taking 20mg once daily, when needed. *Helicobacter pylori eradication:* PO: 20mg Esomeprazole with 1g amoxicillin and 500mg clarithromycin, all 2 times/day x 7 days (refer to the above).<br>*Prevention of rebleeding of gastric and duodenal ulcers:* IV: 80 mg as a bolus infusion over 30 mins, followed by 8 mg/hr continuous IV infusion over 3 days, then by mouth 40mg once daily x 4 wks. | |
| Admin | ± Swallow whole. Do not chew/crush the tablets. For patients with swallowing difficulties, disperse tablet in ½ a glass of non-carbonated water. No other liquid should be used. Stir gently until the tab dissolves into little pellets & drink the liquid with the pellets immediately or within 30 mins. Rinse the glass with ½ glass of water & drink. The dispersion may be administered via a nasogastric tube.<br>By IV injection: reconstitute with 5mL 0.9% NaCl, inject over at least 3 minutes.<br>By Infusion: dilute 40mg in up to 100mL 0.9% NaCl, over a period of 10 – 30 minutes.<br>By 8mg/hr continuous infusion: dilute 80mg in up to 100mL 0.9% NaCl, run 10ml/hr |

| **OMEPRAZOLE (LOSEC-G)** | |
|---|---|
| Prep Policy | Tab 10mg (MUPS – Multi-Unit Pellet System)(A*: Paediatricians and ENT for paediatric patients only) & Cap 20mg (A: Specialist only) |
| Dose: (For treatment of the following ONLY)<br>*Benign gastric/duodenal ulcers:* PO: 20 mg once daily x 4 wks in duodenal ulceration or 8 wks in gastric ulceration, may be increased to 40 mg once daily in severe cases. Maintenance 20mg once daily. *Reflux esophagitis not responding to conventional therapy including $H_2$ antagonists:* PO: 20 mg once daily x 4wks. *Zollinger-Ellison syndrome:* PO: Initially 60 mg once daily; usually range from 20 – 120 mg (Above 80 mg in 2 divided doses). *Helicobacter pylori eradication with antibiotic (refer to the above):* PO: 20 mg 2 times/ day x 1 wk. *GERD:* PO: 20mg once daily x 4 wks, continued further 4-8 wks if not fully healed. *Acid reflux disease (long term management):* PO: 10mg once daily, increase to 20mg once daily if symptoms return. | |
| Admin | ± Swallow whole with at least ½ glass of liquid in the morning. Do not chew, crush or open the capsule.<br>MUPS tab: Tablets may be dispersed in water or any acidic drink (eg, juice). The dispersion must then be taken within 30 min. |
| Notes | Losec MUPS is a dispersible tablet. Suitable for patient whom cannot tolerate orally and patient on Ryle's tube. |

| **PANTOPRAZOLE (CONTROLOC)** | |
|---|---|
| Prep Policy | Tab 20mg & 40mg (A*: Gastroenterologist, Surgeons and ENT specialists), Inj. 40mg (A*: For acute bleeding- Consultant & ED only) |
| Dose:<br>*Symptomatic treatment of reflux oesophagitis (e.g. heartburn, acid regurgitation):* PO: (Mild) 20 mg daily for 4-8 wk. Maintenance: 20 mg daily, may increase to 40 mg/day, if | |

| | |
|---|---|
| relapse occurs, reduce to 20 mg daily once relapse is controlled; (Moderate and severe): 40 mg daily, may increase to 80mg/ day. *Gastric ulcer & GERD*: PO: 40mg in the morning x 4 wks, continued for further 4 wks if not fully healed. *Duodenal ulcer:* PO: 40mg in the morning x 2wks, continued for further 2wks if not fully healed. *Eradication of H pylori in gastric or duodenal ulcers:* PO: 40 mg 2 times/day x 1 wk (refer to the above).<br>*Prevention of rebleeding in peptic ulcer bleed:* IV: 80 mg as a bolus infusion over 30 mins, followed by 8 mg/hr continuous infusion over 3 days | |
| Admin | Tab: Swallow whole with liquid 1 hr before  Do not chew or crush.<br>Inj: Administer intravenously over 2-15 mins<br>2-minute infusion: Reconstitute with 10 ml of NS (4 mg/mL), may be administered intravenously over at least 2 mins.<br>15-minute infusion: Infuse over 15 mins at a rate not to exceed 7 mL/min (3 mg/min)<br>8 mg/hr continuous infusion: Dilute 80 mg in 100 ml NS, rate 10 ml/hr |

| **RANITIDINE (ZANTAC-G)** | |
|---|---|
| Prep | Tab 150mg & 300mg, Syrup 15mg/mL (10mL), Injection 25mg/mL (2mL) |
| Dose:<br>*Treatment of duodenal/benign gastric ulcer, oesophageal reflux disease, treatment & prophylaxis of NSAID associated duodenal ulcers, dyspepsia, GERD, severe oesophagitis, prophylaxis of haemorrhage from stress ulceration:* PO: **Adult** 150mg 2 times/day or 300mg at night for 4-8 weeks (if necessary up to 12 weeks); IM: **Adult** 50mg every 6 – 8 hrs; Slow IV Inj: **Adult & Child** > 12 yo 50mg diluted to 20mL (given over 2 min) which maybe repeated every 6-8 hrs; IV infusion: **Adult** in D5/NS 25mg/hr x 2 hrs, repeat at 6-8 hrs intervals; Syrup: **Child** (paediatric use) 2-4mg/kg 2 times/day to max 300mg/day | |
| Admin | ±  |

## A03 DRUGS FOR FUNCTIONAL GASTROINTESTINAL DISORDERS

| **ALVERINE & SIMETICONE (METEOSPASMYL)** | |
|---|---|
| Prep<br>Policy | Cap Alverine 60 mg & Simeticone 300 mg (A*: Surgeons & Gastroenterologists only) |
| *Antispasmodic to relieve intestinal gas & painful digestion with stomach distension*: 1 cap 2-3 times/day | |
| Admin | Beginning of  |
| Notes | Contraindicated in paralytic ileus |

| **ATROPINE SULPHATE** | |
|---|---|
| Prep | Inj 1 mg/mL (1 mL) |
| *Antispasmodic to relieve gastrointestinal smooth muscle spasm:* SC, IM or IV 0.4–0.6 mg 4 times/day.*Control of muscarinic side effects of neostigmine in reversal of competitive neuromuscular block:* IV 0.6–1.2 mg.*Pre-anaesthetic medication*:IV 0.3-0.6 mg immediately before anaesthesia induction | |
| Notes | For other indications, refer Chapter A07 Antidiarrheals, Intestinal Anti-inflammatory/Anti-infective Agents, Chapter C01 Cardiac Therapy , Chapter S Sensory Organs & Chapter V Various |

| **DOMPERIDONE (MOTILIUM-G)** | |
|---|---|
| Prep | Tab 10 mg, Syrup 1 mg/mL (EX) |
| *Nausea, vomiting, dyspepsia, gastrointestinal reflux*: **Adult & Child > 35 kg** 10–20 mg 3–4 times/day, max 80 mg/day; **Child ≤ 35 kg (nausea, vomiting only)** 250–500 mcg/kg 3–4 times/day, max 2.4 mg/kg/day | |
| Admin | Delayed absorption if taken after meals  |

| **GLYCOPYRROLATE / GLYCOPYRRONIUM** | |
|---|---|
| Prep | Inj 200 mcg/mL (1 mL) |
| *Bowel colic & excessive respiratory secretions in palliative care:* SC infusion 0.6-1.2 mg/24 hrs | |
| Notes | For other indications, refer Chapter R Respiratory System |

| **HYOSCINE / HYOSCYAMINE BUTYLBROMIDE (BUSCOPAN-G)** | |
|---|---|
| Prep | Inj 20 mg/mL (1 mL), Tab 10 mg, Syrup 1 mg/mL |
| *Acute spasm & spasm in diagnostic procedures:* IM or slow IV 20 mg, repeated after 30 mins if necessary (may be more frequently in endoscopy), max 100 mg/day. *Bowel colic & excessive respiratory secretions in palliative care:* SC infusion 20-60 mg/24 hrs.*Smooth muscle spasm:* PO 20 mg 4 times/day.*Irritable bowel syndrome*: PO 10 mg 3 times/day, max 20 mg 4 times/day | |
| Notes | Important: Not to be confused with Hyoscine *hydrobromide* (lower dose, more sedative) |

| **ITOPRIDE HCL (GANATON)** | |
|---|---|
| Prep<br>Policy | Tab 50 mg (A*: Gastroenterologists only) |
| *Treatment of gastrointestinal symptoms of functional, non-ulcer dyspepsia (chronic gastritis):* 50 mg 3 times/day, dose may be reduced according to pt's age & symptoms | |
| Admin |  |
| Notes | Scored, film-coated, formulated to provide immediate release |

| **MEBEVERINE HCL (DUSPATALIN)** | |
|---|---|
| Prep<br>policy | Tab 135 mg<br>(A: Specialists only) |
| *Adjunct in gastrointestinal disorders of smooth muscle spasm:* **Adult & Child > 10 yrs** 135 mg 3 times/day; **Child < 10 yrs** See BNF for Children | |
| Admin | 20 mins before  |

| **METOCLOPRAMIDE HCL (MAXOLON-G)** | |
|---|---|
| Prep | Inj 10 mg/2 mL, Tab 10 mg, Syrup 5 mg/5mL |
| *Motility stimulants & antiemetic*: IM, IV over 1-2 mins or PO: **Adult >20 yo** 10 mg 3 times/day; **Young adults 15-19 yo** 5 mg 3 times/day. *Nausea & vomiting associated with high dose cytotoxic chemotherapy:* Continuous IV infusion (preferred method) Initially before starting chemotherapy, 2-4 mg/kg over 15-20 mins, then 3-5 mg/kg over 8-12 hrs, max 10 mg/kg in 24 hrs. Intermittent IV infusion Initially before starting chemotherapy, up to 2 mg/kg over at least 15 mins, then up to 2 mg/kg over at least 15 min every 2 hrs, max 10mg/kg in 24 hrs; **Child** See BNF for Children. | |

| | |
|---|---|
| Notes | Can cause acute dystonic reactions (facial, skeletal muscle spasms & oculogyric crisis) - more common in the young (esp. girls & young women) & very old – aborted by antiparkinsonian drug inj e.g. Procyclidine |

## A04 ANTIEMETICS AND ANTINAUSEANTS

| **GRANISETRON HCL (KYTRIL)** | |
|---|---|
| Prep<br>Policy | Tab 1 mg<br>(A*: Chemotherapy induced emesis & OT use only), Inj 3 mg/3 mL |
| *Chemotherapy induced nausea & vomiting*: PO 1 mg 2 times/day or 2 mg once/day, up to 1 wk post chemotherapy, 1st dose given within 1 hr before start of chemotherapy.Slow IV over 30 secs or IV infusion over 5 mins For prevention, 1-3 mg (10-40 mcg/kg) before start of chemotherapy; for treatment, same dose as for prevention, if required further doses given at least 10 mins apart, max 9 mg/24 hrs.IM 3 mg, 15 mins before start of chemotherapy, if required 2 additional doses of 3 mg within 24 hrs. *Post-operative N&V*: Slow IV over 30 secs For prevention, 1 mg (10 mcg/kg) prior to anesthesia induction; for treatment, same dose as for prevention, max 3 mg/day | |
| Admin | • IV infusion: Dilute in 20-50 mL (10-30 mL in children) NS, D5, NaCl 0.18%/ Dext 4%, Hartmann's, Sodium lactate, Mannitol. After dilution, stable for 24 hrs at 15-25$^0$C<br>• Admixture with dexamethasone sodium phosphate: Compatible at 10-60 mcg/mL granisetron & 80-480 mcg/mL dexamethasone in NS/D5, stable for 24 hrs |

## A05 BILE AND LIVER THERAPY

| **ESSENTIAL PHOSPHOLIPIDS (ESSENTIALE-G)** | |
|---|---|
| Prep | Softgel |
| *Nutritional support for liver damage (due to chronic disease, liver cirrhosis, fatty liver, intoxication by hepatotoxic substances)*: 1-2 softgels 3 times/day, maintenance 2 softgels 1-2 times/day | |
| Admin |  |
| Notes | • Source of gelatin (Livovid® from Hovid): Bovine<br>• Per softgel of 500 mg lecithin: Essential phospholipids Phosphatidyl Choline 175 mg, Vit $B_1$ 3 mg, Vit $B_2$ 3 mg, Vit $B_6$ 3 mg, Vit $B_{12}$ 3 mcg, Vit E 3.3 mg, Nicotinamide 15 mg |

| **URSODEOXYCHOLIC ACID (URSOFALK)** | |
|---|---|
| Prep<br>Policy | Cap 250 mg , Syrup 25 mg/mL & 60 mg/mL (EX)<br>Cap 250 mg (A: Specialists only) |
| *Dissolution of cholesterol gallstones (<15 mm in diameter, radiolucent stones, functioning gallbladder):* 8-12 mg/kg/day (2-5 caps) as a single dose at bedtime or in 2 divided doses, continued for 3-4 mths after stones dissolve, for up to 2 yrs. *Cholestatic liver disease (e.g. compensated primary biliary cirrhosis, cholestasis of pregnancy):* 10-15 mg/kg/day in 2-4 divided doses | |
| Admin | Swallow cap whole with liquid |

| | |
|---|---|
| Notes | • Dissolution generally takes 6-24 mths, long term prophylaxis may be needed after complete dissolution as recurrence rate up to 25% of pts within 1 yr of stopping treatment<br>• Do not continue treatment if stones have not become smaller after 12 mths, monitor every 6 mths by USG/X-ray<br>• Take antacids containing Alu hydroxide/oxide & cholestyramine 2 hrs before or after Ursofalk (its absorption & efficacy reduced by these interactions) |

## A06 LAXATIVES

| **BISACODYL (DULCOLAX-G)** | |
|---|---|
| Prep | Tab 5 mg, Supp 5 mg & 10 mg |
| *Stimulant laxative in constipation*: PO: **Adult& Child > 10 yo** 5-10 mg at night, max 20 mg; **Child 4-10 yo** 5 mg at night. Rectal: **Adult& Child 10 yo** 10 mg in the morning; **Child 2-10 yo** 5 mg in the morning. *Before radiological procedures & surgery*: **Adult**PO 10-20 mg at night before procedure and Rectal 10 mg the following morning; **Child 4-10 yo**PO 5 mg at bedtime for 2 days before procedure and if necessary Rectal 5 mg 1 hr before procedure; **Child 10-18 yo** PO 10 mg at bedtime for 2 days before procedure and if necessary Rectal 10 mg 1 hr before procedure | |
| Admin | • Do not chew, swallow whole with a glass of water<br>• Milk & antacid should not be taken within 1 hr of Bisacodyl |
| Notes | Onset of action- Tab: 10-12 hrs, supp 20-60 mins |

| **FLEET ENEMA** | |
|---|---|
| Prep | 133 mL (Adult) & 66.6 mL (Paediatric) |
| *Relief of occasional constipation & bowel cleansing before rectal examinations*: Rectal **Adult** 1 bottle; **Child > 2 yo** 1 Paediatric bottle or ½ Adult bottle | |
| Admin | • See illustration on bottle packaging for positioning & OPD counselling leaflet for more bowel preparation info<br>• Discontinue use if resistance encountered - forcing can result in injury; Not necessary to empty bottle completely - small amount will remain in bottle after squeezing<br>• Maintain position until urge to evacuate is strong (usually 2-5 mins) |
| Notes | • Onset of action: 2-5 mins<br>• Adult: Per delivered dose of 118 mL - monobasic Na biphosphate19 g, dibasic Na phosphate7 g, Na content 4.4 g<br>• Paediatric: Per delivered dose of 59 mL – Na biphosphate 9.5 g, Na phosphate 3.5 g, Na content 2.2 g |

| **FLEET® PHOSPHO SODA ORAL SALINE LAXATIVE** | |
|---|---|
| Prep | Oral solution 45 mL |
| *Laxative:* PO **Adult & Child 10 yo onwards** 1 tablespoon in full glass of cold water/clear liquid*, then drink another 1 full glass of liquid, max daily dose is 3 tablespoons in Adult & Child ≥ 12 yo& 1 tablespoon in Child 10-11 yo; **Child 5-9 yo**: ½ tablespoon in full glass of cold water/clear liquid* plus another 1 full glass of liquid, max daily dose is ½ tablespoon; **Child < 5 yo**: Do not use. *Bowel cleansing*: **Adult & Child > 15 yo** At 7 pm, 45 mL diluted with half glass (120 mL) of cold water/clear liquid*, then drink another 1 | |

| | |
|---|---|
| full glass (240 mL) of liquid. At 9 pm, 45 mL diluted with half glass (120 mL) of liquid, then drink another 3 full glass of liquid at least. Before midnight, drink at least 3 additional glass of liquid | |
| Notes | • *Clear liquid: Not red/purple-coloured e.g. strained juices without pulp, water clear broth/soup, black coffee/tea, carbonated/non-carbonated soft drink<br>• Per 15 mL: monobasic Na phosphate (monohydrate) 7.2g (48%) & dibasic Na phosphate (heptahydrate) 2.7g (18%)<br>• 1 tablespoon contains Na 1668 mg, sugar-free<br>• Onset of action: ½ - 6 hrs of first dose<br>• Remain close to toilet facilities for multiple bowel movement<br>• Not to be used in pts with renal failure, congestive heart failure, megacolon, ascites, active inflammatory bowel disease, Crohn's disease, ulcerative colitis, nausea, vomiting, abdominal pain, perforation, ileus (GI obstruction / lack of motility)<br>• See OPD counselling leaflet for more bowel preparation info |

| **GLYCERIN ENEMA (RAVIN ENEMA-G)** | |
|---|---|
| Prep | Glycerin 25% w/v & NaCl 15% w/v per 20 mL ampoule |
| *Constipation*: Rectal **Adult** 1 ampoule, repeat another dose if no bowel movement after ½ hr. *Functional immaturity of the colon in premature baby*: Rectal 0.25 – 1 mL od-qid, dose & frequency depend on bowel output & GI distension (NICU experience) | |
| Admin | • For neonates & children, may administer rectally via Ryle's tube<br>• Onset of action: 15-30 mins |

| **LACTULOSE (DUPHALAC-G)** | |
|---|---|
| Prep | Lactulose BP 3.35 g / 5 mL |
| *Constipation*: **Adult** 15 mL 2 times/day, adjusted to pt's needs; **Child 5-10 yo** 10 mL 2 times/day; **Child 1-5 yo** 5 mL 2 times/day; **Child< 1 yo** 2.5 mL 2 times/day. *Hepatic encephalopathy*: 30-50 mL 3 times/day, dose adjusted to produce 2-3 stools/day | |
| Notes | Onset of action: Up to 48 hrs to act |

| **LIQUID PARAFFIN BP** | |
|---|---|
| Prep | 100 mL |
| *Constipation*: PO 10-30 mL at night, max 45 mL, oil leakage from anus should prompt dose reduction | |
| Admin | • Not be taken immediately before going to bed (lipoid pneumonitis)<br>• Avoid at meal times (malabsorption of fat-soluble vitamins) |
| Notes | • Not recommended as first line<br>• Avoid in pt< 6 months old, with swallowing difficulty &risk of aspiration e.g. neurological disorder, GORD (lipoid pneumonitis)<br>• Onset of action: 1-3 days<br>• For other indications, refer Chapter D Dermatologicals |

| **MACROGOL (FORTRANS)** | |
|---|---|
| Prep | 74 g powder for oral solution |
| *Colonic lavage for endoscopic & radiological examinations and colonic surgery*: PO **Adult & Child >12yo** 1 sachet dissolved in 1 L water, 3-4 sachets in total taken a day before procedure. Alternatively, split dose (2+1 or 2+2 regimen can be taken a day | |

| | |
|---|---|
| before & in the morning of the procedure day. Doses should be completed at least 3 hrs before procedure | |
| Admin | • Solution preferably chilled – improved palatability<br>• See Bowel Preparation Pamphlet by Fortrans® |
| Notes | • Bowel evacuation within 1-2 hrs after dose<br>• Per sachet: Polyethylene glycol 4000 64 g, anhydrous Na sulphate 5.7 g, Na bicarbonate 1.7 g, NaCl 1.5 g, KCl 0.75 g, saccharin Na 0.1 g |

## A07 ANTIDIARRHOEALS, INTESTINAL ANTIINFLAMMATORY/ANTIINFECTIVES

### A07 i) ANTIDIARRHOEALS

- The first line treatment in acute diarrhoea and gastro-enteritis is prevention of fluid and electrolyte depletion – drug therapy is therefore NOT indicated in ACUTE DIARRHOEA.
- Antimotility drugs are NOT recommended for acute diarrhoea in young children.

| **DIPHENOXYLATE HYDROCHLORIDE & ATROPINE SULPHATE (LOMOTIL-G)** | |
|---|---|
| Prep | Tab Diphenoxylate 2.5mg & Atropine 25μg |
| Dose:<br>*Symptomatic treatment of acute & chronic diarrhoea; control of faecal consistency after colostomy or ileostomy:* PO: **Adult** Initially 4 tab followed by 2 tab every 6 hrs until diarrhoea is controlled; **Child** 4 – 9 yo 1 tab 3 times/day; 9-12 yo 1 tab 4 times/day; 12 – 16 yo 2 tab 3 times/day. | |
| Admin | ± |
| Notes | Can cause drowsiness, dizziness & dry mouth. Not recommended for children <4 yo. |

| **ACTIVATED CHARCOAL** | |
|---|---|
| Prep | Tab 250mg & Powder |
| Dose:<br>*Treatment of flatulence and diarrhoea:* PO: **Adult** 2-4 tab 3-4 times/day until diarrhoea stops; **Child** >12 yrs 1 – 2 tablets 3-4 times/day; *Reduction of absorption of poisons that are toxic in small amounts (esp. Aspirin, Carbamazepine, Dapsone, Phenobarbitone, Quinine, and Theophylline):* Powder: **Adult** Initial 50g or 1-2g/kg, then 25-50g every 4 hrs; **Child** < 12 yrs 1g/kg (max. 50g) every 4 hrs | |
| Admin | Give within 1-2 hours of ingestion, or within 4 hours for salicylates/SR drugs. |
| Notes | Activated charcoal may interfere with the absorption of other drugs, including antibiotics, when administered concurrently. |

| **LOPERAMIDE (IMODIUM-G)** | |
|---|---|
| Prep | Cap 2mg |
| Dose:<br>*Symptomatic control of acute & chronic diarrhea associated with inflammatory bowel disease; reduce number & vol of stools in patients with an ileostomy:* PO: **Adult** 4mg stat, followed by 2mg after each loose stool, max. daily dose 16mg; **Child** ⩾4-8yo 1mg | |

| | |
|---|---|
| 3-4 times/day max. 3 days, 9-12yo 2mg 4 times/day max. 5 days. | |
| Admin | ±  |
| Notes | Not recommended for child <4 yrs old. May cause drowsiness.<br>Loperamide should be avoided when ileus is present or when abdominal distension develops particularly in severely dehydrated children; patients with acute ulcerative colitis or pseudo membranous colitis associated with broad spectrum antibiotics; patients with bacterial enterocolitis caused by invasive organisms including Salmonella. |
| **NYSTATIN (MYCOSTATIN-G)** | |
| Prep | Tab 500,000 unit; Suspension 100,000IU/mL, 60mL |
| Dose:<br>*Intestinal candidiasis:* PO: 1-2 tabs (500,000 – 1,000,000 units) 3 times/day. Continue for at least 48 hrs after clinical cure. *Oropharyngeal candidiasis:* suspension: **Adult & Child** 1 to 6 mL (100,000 to 600,000 units) 4 times/day, continue treatment for at least 48 hr after lesions disappear. (HIV patients, duration) treat for 7 to 14 days. **Infant** 1mL (100,000 units) 4 times/day after meals. | |
| Admin | Tablet: ±  ; Oral suspension: retained in mouth as long as possible (for several minute) before swallowing. Avoid taking food or drink earlier than 1 hr after a dose. |

| | |
|---|---|
| **REHYDRATION SALTS, ORAL (ORS)** | |
| Prep | Sachets [Na, K, Glucose]<br>Contents and molarity of salts differ in different brands, please refer to the brand in use for detail information |
| Dose:<br>*For replacement of water and electrolytes lost in diarrhoea:* PO: (PRN) **Adult** 200-400mL after each loose stool (or 20-40mL/kg/day); **Child** 200mL after each loose stool; **Infant** 1-1.5 times usual feed volume after each loose stool (or 100-150mL/kg/day). | |
| Admin | ±  Dissolve each sachet of powder in 250mL of cool boiled water. |
| Notes | Any portion of the solution that remains unused 24 hours after preparation should be discarded. Do not boil. |

## A07 ii) TREATMENT OF INFLAMMATORY BOWEL DISEASE

- Aminosalicylates (**Sulphasalazine & Mesalazine**) should be avoided in salicylates hypersensitive & in moderate & severe renal impairment.
- **Mesalazine** is indicated only for ulcerative colitis treatment (tab also indicated for rheumatoid arthritis) in patients who are intolerant or who do not respond to **Sulphasalazine**.
- Patients receiving **Mesalazine/Sulphasalazine** should be advised to report any unexplained bleeding, bruising, purpurea, sore throat, fever or malaise during treatment. A blood count should be performed and the drug stopped immediately if suspecting blood dyscrasia.
- Refractory or moderate inflammatory bowel disease usually requires adjunctive use of an oral **corticosteroid** (eg. prednisolone) for 4-8 weeks. Severe inflammatory bowel disease or disease not responding to oral corticosteroid requires intravenous corticosteroid (eg. Hydrocortisone or Methylprednisolone).

| **MESALAZINE (SALOFALK)** | |
|---|---|
| Prep<br>Policy | Enema 2g/30mL<br>A*: Gastroenterologists only |
| Dose:<br>*Treatment of ulcerative colitis in patients who are intolerant or who do not respond to sulphasalazine:* Rectal: Two enemas (60mL) is given once daily rectally before retiring | |
| Admin |  |
| Notes | If problem to retain larger quantity of Salofalk enema, may be also be applied in two doses eg. during the night (after bowel movement which discharges the first dose) or early in the morning. |

| **MESALAZINE (PENTASA)** | |
|---|---|
| Prep<br>Policy | Tab 500mg (Prolonged Release) (A*: Rheumatologists only), Suppository 1g |
| Dose:<br>*For treatment of ulcerative colitis in patients intolerant or unresponsive to sulphasalazine:* PO: Acute attack , 1g 4 times/day; maintenance 500mg 3 times/day.<br>*Ulcerative proctitis:* Rectal: 1 supp daily | |
| Admin | PR tab: ±  Swallow whole, do not chew/crush. If necessary, may be divided along the score-line or dispersed in water to facilitate swallowing. |
| Notes | Pentasa suppositories shall be stored in the original packaging at 15-25°C. |

| **SULPHASALAZINE (SALAZOPYRIN)** | |
|---|---|
| Prep | Tab 500mg |
| Dose:<br>*Ulcerative colitis:* PO: **Adult** acute attack 1-2g 4 times/day until remission occurs, reduce to maintenance 500mg 4 times/day; **Child** ≥6 yo, acute attack 40-60mg/kg/day divided into 3-6 doses; maintenance 30mg/kg/day, divided in 4 doses up to a max. 2g/day. | |
| Admin | Immediately after  . Ensure adequate fluid intake. Swallow whole, do not chew/crush. |

| **HYDROCORTISONE** | |
|---|---|
| Prep | Enema 0.2%, 50 mL (syringe)<br>Formula : Hydrocortisone 100mg Inj (100mg); Water for Injection (2ml) Sodium Chloride 0.9% Inj to 50ml |
| Dose:<br>*Adjunctive treatment of ulcerative colitis:* Rectal: **Adult** 10-100mg 1-2 times/day for 2-3 weeks. | |
| Admin | Prepare extemporaneously. Inserted into rectum. |
| Notes | For external use only. Keep in a cool place, away from light. |

## A08 ANTIOBESITY PREPARATIONS, EXCLUDING DIET PRODUCTS

| **ORLISTAT (XENICAL)** | |
|---|---|
| Prep<br>Policy | Cap 120mg<br>A*: Endocrinologists only |
| Dose: | |

| | |
|---|---|
| *Morbid obesity in conjunction with dietary control, approved for obese patients with a body mass index (BMI) of ⩾30 kg/m$^2$ in the presence of other risk factors eg, diabetes, hypertension or hyperlipidemia:* PO: 120mg 3 times/day with each main meal containing fat | |
| Admin | Take immediately before or during or up to 1 hr after each main meal.<br>If a meal is missed or contains no fat, the dose may be omitted. |
| Notes | Restriction in prescribing: Max duration of treatment: 6 months<br>Not recommended in patients with chronic malabsorption and cholestasis, child < 18 yo. |

## A09 DIGESTIVES, INCLUDING ENZYMES

| **PANCREATIN (CREON 10,000)** | |
|---|---|
| Prep | Cap 150mg (Pancreatin 150mg : Lipase 10,000 units, amylase 8,000units, protease 600units)- enteric-coated minimicrospheres |
| Dose:<br>*Treatment of pancreatic exocrine insufficiency cause by e.g. Cystic fibrosis:* PO: **Child** < 4 yo 1000 lipase units/kg/meal; **Child** > 4 yo 500 lipase units/kg/meal. Max: 10,000units/kg/day.<br>*Others such as chronic pancreatitis, pancreatectomy, total gastrectomy, gastric partial resection, ductal obstruction of neoplasm, or ageing, also for late allograft pancreatitis:* PO: For main meal (breakfast, lunch, dinner) 20000 – 75000 units lipase, in-between snacks 5000 – 25000 units lipase.<br>Usual starting dose is 10,000 – 25,000 unit lipase/main meal. Up to 50,000 lipase/meal can be given. | |
| Admin | Capsule swallowed intact with enough fluid. Where swallowing is difficult (small children or elderly), open cap & mix granules with soft food or liquid with pH <5 (eg. fruit juice). If mixed with soft food or juice, swallow the mixture immediately. Do not crush the capsule. |
| Notes | It is recommended to take half or one third of the total dose at the beginning of the meal and the rest during it. |

## A10 DRUGS USED IN DIABETES

### A10 i) INSULINS AND ANALOGUES

- All insulins - **fridge item (2°C - 8°C)** unless those currently in use
- In-use shelf life: **4 weeks** when stored at **room temperature (below 25°C)**
- Acute illness: insulin requirements may vary – consider changing to Actrapid SC 3 times/day and assess insulin requirements frequently.
- Drug of choice for treatment of diabetes during pregnancy.
- **Oral Glucose Tolerance Test:** Dextrose Monohydrous Powder 75g (Anhydrous Glucose) is available from Pharmacy Department

### A10 ia) SHORT-ACTING INSULIN

- The rapid-acting human insulin analogues, insulin **Aspart**, and insulin **Lispro** have a faster onset and shorter duration of action than soluble insulin (insulin **Actrapid**). Insulin analogues can help those susceptible to hypoglycaemia before lunch, and those who eat in the late evening and are prone to nocturnal hypoglycaemia.

| **INSULIN ASPART (NOVORAPID)** | |
|---|---|
| Prep<br>Policy | Penfill (for Novopen devices) / Flexpen (prefilled) 300IU/3mL (A*: Endocrinologists & O&G specialists only) |
| Dose:<br>*Diabetis mellitus:* SC/SC infusion/IV/IV infusion: According to requirements. SC: The individual total insulin requirement is usually between 0.5 and 1 iu/kg/day. In a basal-bolus treatment regimen, 50-70% of this requirement maybe provided by insulin aspart and the remainder by intermediate- or long acting insulin. | |
| Admin | To be injected immediately before or when necessary soon after |
| Notes | Can be used in pregnancy and nursing mother. |

| **INSULIN LISPRO (HUMALOG)** | |
|---|---|
| Prep<br>Policy | Penfill (for Humapen)/ Kwikpen (prefilled) 300IU/3mL<br>A*: Endocrinologists only |
| Dose:<br>*Treatment of DM for the control of hyperglycemia:* SC/SC infusion/IV/IV infusion: According to requirements. SC: *Type 1 DM* individualize dose per patient needs; use in combination with an intermediate- or long-acting insulin; usual total daily insulin requirement is 0.5 to 1 iu/kg/day; *Type 2 DM* individualized per patient needs. | |
| Admin | Inject shortly (≤15min) before or when necessary soon after |
| Notes | Cartridge (Penfill) is used for infusion route or in insulin pump |

| **SOLUBLE INSULIN (ACTRAPID HM)** | |
|---|---|
| Prep | Penfill (for Novopen devices) 300IU/3mL & Injection 100IU/mL, 10mL |
| Dose:<br>*Insulin-requiring DM:* SC, IM, IV or IV Infusion: According to requirements. SC: Initial 6 unit or 0.1 u/kg before each meal. Usually given 3 times/day. May be used in combination with long acting insulin. | |
| Admin | To be injected 30 min before |
| Notes | Not recommended for use in SC insulin infusion pumps-may precipitate in catheter or needle. Storage: after first opening, do not refrigerate. In-use shelf life is 6 weeks when stored below 30°C. |

## A10 ib) BIPHASIC INSULINS

| **30% SOLUBLE INSULIN & 70% ISOPHANE INSULIN (MIXTARD 30)** | |
|---|---|
| Prep | Penfill (for Novopen devices) 300IU/3mL |
| Dose:<br>*Insulin-requiring diabetes mellitus:* SC: According to requirements. Individual insulin requirement is usually between 0.3-1.0 iu/kg/day. Administer once or 2 times/day. | |
| Admin | To be injected 30 min before |

| | |
|---|---|
| Notes | Cloudy, white suspension. |

| **30% SOLUBLE INSULIN ASPART & 70% PROTAMINE-CRYSTALLISED INSULIN ASPART (NOVOMIX 30)** | |
|---|---|
| Prep | Flexpen (prefilled) 300IU/3mL (A*: Endocrinologists only) |
| Dose:<br>*Type 1 DM:* SC: Individualized dosage. 0.5-1 u/kg/day;<br>*Type 2 DM:* SC: Initially, 6 unit at breakfast & 6 unit at dinner, or 12 u/day at dinner then switch to equal breakfast and dinner doses (2 times/day) when 30 units is reached. | |
| Admin | To be injected immediately before or after  |
| Notes | White suspension. |

## A10 ic) INTERMEDIATE & LONG-ACTING INSULINS

- Insulin **Glargine** and insulin **Detemir** are both long-acting human insulin analogues with a prolonged duration of action. In patient with type 2 diabetes, insulin detemir or insulin glargine maybe considered for those: who require assistance with injecting insulin, whose lifestyle is significantly restricted by recurrent symptomatic hypoglycaemia or who would otherwise need twice-daily basal insulin injections in combination with oral antidiabetic drugs.

| **ISOPHANE INSULIN (INSULATARD HM)** | |
|---|---|
| Prep | Penfill (for Novopen devices) 300IU/3mL |
| Dose:<br>*Type 1 DM:* SC: individualize dose to achieve glucose target;<br>*Type 2 DM:* SC: initial 10 iu/day or 0.2 iu/kg/day once or 2 times/day, maintenance individualize dose to achieve glucose target. May be used alone or combined with fast- or rapid-acting insulin or in combination with 1 or 2 non-insulin agents. | |
| Admin | At bedtime |
| Notes | Cloudy, white suspension |

| **INSULIN GLARGINE (LANTUS)** | |
|---|---|
| Prep<br>Policy | SoloStar (prefilled) 300IU/3mL (A*: Endocrinologists only) (Paeds and adults) |
| Dose:<br>*Treatment of Type 1 DM in adults & children ⩾6 yr:* SC: Individualized. Approximately one-third of total daily insulin requirement; use in combination with rapid- or short-acting insulin;<br>*Type 2 DM in adults who require insulin for the control of hyperglycaemia*: *SC:* insulin naive, 10 units (or 0.2 iu/kg) once daily. Can be given together with orally active antidiabetic medicinal products. | |
| Admin | At any time but at the same time each day. |
| Notes | Clear insulin. |

| **INSULIN DETEMIR (LEVEMIR)** |
|---|

| | |
|---|---|
| Prep<br>Policy | Flexpen (prefilled) 300IU/3mL<br>A*: Endocrinologists only |
| Dose:<br>*Type I DM:* SC: initial, approximately one-third of total daily insulin requirement, use in combination with rapid- or short-acting insulin, maintenance, individualized dose; *Type 2 DM* inadequately controlled on oral antidiabetic agents: SC: initial, 10 units (0.1-0.2 iu/kg) once daily or 2 times/day in combination with oral antidiabetics, maintenance, individualized dose | |
| Admin | Once daily at the same time everyday.<br>Once daily regimen: administer with evening meal or at bedtime<br>Twice daily regimen: administer in the morning and with the evening meal or at bedtime, or 12 hours after the morning dose. |
| Notes | Clear, colourless solution. In-use shelf life is 6 weeks when stored below 30°C. |

## A10(ii) ORAL HYPOGLYCEMIC AGENTS

### A10 iia) Sulphonylureas

- Sulphonylureas augment insulin secretion and are effective only when some residual pancreatic beta-cell activity is present.
- Considered for patients who are not overweight, or in whom Metformin is contraindicated or not tolerated.
- **Glibenclamide**, a long-acting sulphonylurea, is associated with a greater risk of hypoglycaemia, should be avoided in elderly, and shorter-acting **Gliclazide** should be used instead.
- Side effects generally mild and infrequent: GI disturbances or hypersensitivity reactions (usually first 6-8 weeks of therapy), increased appetite and weight gain, metallic taste
- **Caution** is needed in the elderly and in those with mild to moderate hepatic and renal impairment because of the hazard of hypoglycemia. It should be **avoided** where possible in severe hepatic & renal impairment, in porphyria, presence of ketoacidosis, pregnancy & breast-feeding.

| **GLIBENCLAMIDE (DAONIL -G)** | |
|---|---|
| Prep | Tab 5mg |
| Dose:<br>*Type 2 Diabetes mellitus:* PO: Initially 2.5mg once daily, adjusted according to response. Max 15mg/day, exceptional cases 20mg/day. Doses >10mg should be given in 2 divided doses. | |
| Admin | Take immediately before breakfast, any remaining portion (doses >10mg) to be taken before evening meal. |

| **GLICLAZIDE (DIAMICRON-G, DIAMICRON MR-G)** | |
|---|---|
| Prep<br>Policy | Tab 80mg & MR 60mg<br>A: Specialists & *Pusat Perubatan Primer* Specialists only |
| Dose:<br>*Type 2 Diabetes mellitus:* PO: Conventional formulation: Initially 40-80mg, adjusted according to response, Max 320mg daily. Doses of > 160mg daily should be given in 2 divided doses. **Elderly** Initial 40mg 2 times/day (morning, evening); Modified Release: | |

| | |
|---|---|
| Initially, 30 mg once daily, may increase dose to 60, 90 or 120 mg daily at 1-mth interval in a single dose at breakfast time. Max: 120 mg daily. | |
| Admin | Conventional formulation:  Take immediately before meals.<br>Modified Release: Tablet can be divided into equal halves. Swallow whole, do not chew/crush. Should be taken with food. Take immediately before meals. |
| Notes | For dose conversion: Diamicron 80mg ≅ Diamicron MR 30mg (1/2 tablet of Diamicron MR 60mg). eg: Diamicron 80mg 1 tab with breakfast and 1 tab with dinner has to be switched to Diamicron MR 60mg 1 tab with breakfast. |

| **GLIMEPIRIDE (AMARYL, AMARYL-G)** | |
|---|---|
| Prep<br>Policy | Tab 2mg & 3mg<br>A: Specialists & Tasik Selatan only |
| Dose:<br>*Type 2 DM:* PO: Initially 1mg once daily, adjusted accordingly to response in 1mg steps at 1- 2 weeks intervals. Usual max. 4mg daily (exceptionally up to 6mg daily). | |
| Admin | To be taken immediately before or with first main meal.  <br>To be swallowed whole without chewing and with sufficient amounts of liquid. (approximately half glass). |
| Notes | May be used in combination with Metformin or with insulin. |

## A10 iib) BIGUANIDES

- **Metformin** is the drug of first choice in overweight patients in whom strict dieting has failed to control diabetes.
- Advantages: hypoglycaemia does not usually occur, lower incidence of weight gain.
- May provoke **lactic acidosis** especially in patients with renal impairment, avoid in significant renal impairment. Avoid excessive alcohol intake as may also potentiate lactic acidosis.
- Contraindication: hypersensitivity, diabetic ketoacidosis, diabetic pre-coma; renal failure or dysfunction, Acute conditions with potential to alter renal function eg dehydration, severe infection, shock, sepsis, acute heart failure, recent myocardial infarction

| **METFORMIN HYDROCHLORIDE (GLUCOPHAGE-G, GLUCOPHAGE XR, GLUCOPHAGE RETARD-G)** | |
|---|---|
| Prep & Policies | Tab 500mg, 500mg extended release (A: Specialists & Family Medicine Specialists only), 850mg Retard (A: Specialists & FMS only) |
| Dose:<br>*Treatment of type 2 diabetes mellitus in adult when dietary management & exercise alone does not result in adequate glycaemic control. Maybe used as monotherapy or in combination with other oral antidiabetic agents or with insulin:* PO: Initially 500mg 2 times/day or 3 times/day, dosage should be adjusted 10-15 days interval, max 3g daily in divided doses. Retard: 850mg 2 times/day, max 850mg 3 times/day. XR: initially 500mg once daily with evening meal. Dosage should be adjusted 10-15 days interval, max 2g daily.<br>In patients already treated with metformin, the starting dose of Glucophage XR should be the same as total daily dose of metformin. | |

| | |
|---|---|
| Admin |  or after  <br>XR: Swallow whole. Do not chew. Do not crush tab (extended release). |
| Notes | Slow increase of dose may improve gastrointestinal tolerability.<br>If metabolic acidosis is suspected, metformin should be discontinued.<br>Glucophage XR 850mg 2x/daily= 3 tabs Glucophage XR 500mg<br>Glucophage XR 500mg 2x/daily = 2 tabs Glucophage XR 500mg |

| **METFORMIN HYDROCHLORIDE/GLIBENCLAMIDE (GLUCOVANCE)** | |
|---|---|
| Prep | Tab 500mg/2.5mg, 500mg/5mg |
| Dose:<br>*2nd-line therapy when diet, exercise & initial treatment with Sulfonylurea or Metformin results in inadequate glycaemic control in patients with type 2 diabetes:* PO: Initial 500 mg/2.5 mg or 500 mg/5 mg 2 times/day. Daily dose should be titrated in increments of no more than 500/5mg up to a minimum effective dose or maximum dose of 2,000 mg/20 mg/day. | |
| Admin |  |

## A10 iic) OTHER ANTI-DIABETICS

| **ACARBOSE (GLUCOBAY-G)** | |
|---|---|
| Prep | Tab 50mg & 100mg |
| Dose:<br>*Treatment of non-insulin dependent (NIDDM) diabetes mellitus in patients inadequately controlled on diet alone, or on diet and oral hypoglycaemic agents:* PO: Initially 50mg once or 2 times/day (to minimize GI side effects) up to 50mg 3 times/day, increased if necessary after 6-8wks to 100mg 3 times/day. Max 200mg 3 times/day. | |
| Admin |  To chew tablet with first mouthful of food or swallow whole with a little liquid immediately before food. |
| Notes | GI symptoms, flatulence, diarrhoea may be notable in some patients but these side effect tends to return to pretreatment levels over time. |

| **REPAGLINIDE (NOVONORM)** | |
|---|---|
| Prep<br>Policy | 1mg & 2mg<br>A: Specialists only |
| Dose:<br>*Type 2 DM where hyperglycaemia cannot be controlled by diet, weight reduction & exercise. As monotherapy or in combination with Metformin:* PO: Initially 0.5mg before each main meals (1mg if transferring from another oral hypoglycaemic), adjusted according to response at intervals of 1-2weeks, up to 4mg may be given as a single dose, Max 16mg daily. | |
| Admin | To be taken within 30 min before main meals  <br>(i.e. 2, 3, 4 times a day depending on the number of meals). If you miss a meal (or add an extra meal), skip (or add) a dose for that meal. |
| Notes | Not recommended for patient <18 or >75 y.o. |

| **ROSIGLITAZONE (AVANDIA)** | |
|---|---|
| Prep | Tab 4 mg |
| Policy | A*: Endocrinologists only |
| Dose: *For Type 2 DM insulin-resistant patients only (can be used in combination with Metformin &/or Sulfonylurea):* PO: 4mg once daily or in 2 divided doses, may be increased to 8mg daily (in 1 or 2 divided doses) after 8 weeks according to response. Max: 8mg daily. | |
| Admin | ±  |
| Notes | Thiazolidinediones. Not recommended: patients with NYHA Class III and IV heart failure, symptomatic heart failure, children <17 yr. Initiation of therapy in patient with active liver disease or increased serum ALT level >2.5 x the upper limit of normal, acute coronary syndrome is not recommended. Discontinue drug if deterioration of cardiac status occurs. |

| **PIOGLITAZONE (ACTOS)** | |
|---|---|
| Prep | Tab 15 mg, 30mg |
| Policy | A*: Endocrinologists only |
| Dose: *Treatment of Type 2 Diabetes (can be used in combination with metformin or Sulfonylurea):* PO: Initiated at 15mg or 30mg once daily. The dose may be increased up to 45mg once daily. | |
| Admin | ±  |
| Notes | Not recommended: patients with cardiac failure (NYHA Stage I to IV), hepatic impairment, diabetic ketoacidosis, children <18 yo. Discontinue drug if deterioration of cardiac status & jaundice is observed. |

| **SITAGLIPTIN PHOSPHATE (JANUVIA)** | |
|---|---|
| Prep | Tab 25mg, 50mg, 100mg |
| Policy | A*: Endocrinologists only |
| Dose: *For Type 2 DM. Monotherapy or combination therapy with Metformin, Sulfonylurea, insulin (±Metformin), PPARγ agonist (eg. Thiazolidinedione), Metformin + Sulfonylurea or Metformin + PPARγ agonist:* PO: 100 mg once daily. In combination therapy with sulfonylurea or insulin, lower dose of sulfonylurea or insulin should be considered. *Crcl ≥30 to <50mL/min: 50mg once daily. Crcl <30mL/min or ESRD requiring hemodialysis: 25mg once daily. | |
| Admin | ±  |

| **SITAGLIPTIN PHOSPHATE + METFORMIN HCL (JANUMET)** | |
|---|---|
| Prep | Tab 50mg/500mg, 50mg/850mg, 50mg/1000mg |
| Policy | A*: Endocrinologists only |
| Dose: *As initial therapy or as adjunct to diet & exercise to improve glycemic control in type 2 DM inadequately controlled on Metformin or Sitagliptin alone, dual combination therapy with any of the two (Sitagliptin, Metformin or a Sulfonylurea), or max tolerated dose of Metformin & a PPARγ agonist, or combination with insulin & metformin:* PO: Individualized dosage. Initially 50 mg/500 mg 2 times/day. Max daily dose: Sitagliptin | |

| | |
|---|---|
| 100 mg/metformin 2 g. | |
| Admin |  |
| Notes | The starting dose of Janumet should be based on patient's current regimen. |

| **LIRAGLUTIDE (VICTOZA)** | |
|---|---|
| Prep<br>Policy | Victoza pen (prefilled) 6mg/mL, 3mL<br>A*: Endocrinologists only |
| Dose:<br>*For treatment of Type 2 Diabetic patients poorly controlled with diet plus metformin and/or sulfonylureas (obese patients):* SC: Initially 0.6 mg daily, increase dose to 1.2 mg after at least 1 wk. Max: 1.8 mg/day. | |
| Admin | Once daily at any time, independent of meals. |
| Notes | Not a substitute for insulin. Contraindicated in Type 1 DM, diabetic ketoacidosis, severe renal impairment & end-stage renal disease, Pregnancy & lactation. |

## A11 VITAMINS

| **ALFACALCIDOL (ONE-ALPHA)** | |
|---|---|
| Prep<br>Policy | Inj 2 mcg/mL (0.5 mL),<br>Inj 2 mcg/mL (A: Specialists only),<br>Cap 0.25 mcg & 1 mcg(A*: Endocrinologists, Nephrologists, Paediatrics, O&G Specialists, Orthopaedic ,Rheumatologists, Surgeon)<br>Drop 2 mcg/mL (A*: Endocrinologists, Nephrologists, ENT & Paediatrics) |
| *Renal osteodystrophy, hypoparathyroidism, adjunct in tertiary hyperparathyroidism management, neonatal hypocalcemia, Rickets, calcium malabsorption, osteoporosis, osteomalacia*: Slow IV over 30 secs/PO **Adult & Child > 20 kg** Initially*1 mcg/day (elderly 0.5 mcg/day), maintenance generally 0.25-2 mcg/day, most pts respond to 1-3 mcg/day; **Child <20kg** Initially* 0.05 mcg/kg/day; **Neonate** Initially*0.05-0.1 mcg/kg/day. *Hemodialysis pt*: IV Inj administered following each HD into the return line from HD machine at the end of each HD, initial dose 1 mcg/HD, max 6 mcg/HD & 12mcg/wk | |
| Admin | Drop: Overturn bottle, gently tap bottle & a drop will form by itself at the tip, do not remove the internal dropper or use external syringe to administer |
| Notes | • *Dose adjusted to biochemical response to avoid hypercalcaemia<br>• One-Alpha® drop: 1 drop = 0.1 mcg<br>• Alfacalcidol (inactive, 1α-hydroxycholecalciferol) requires liver conversion to calcitriol (active, 1α, 25-dihydroxycholecalciferol) |

| **ASCORBIC ACID (VITAMIN C)** | |
|---|---|
| Prep | Tab 100 mg (chewable) |
| *Prevention of scurvy:* PO*:* 25-75 mg/day. *Treatment of scurvy:* 100-250 mg 1-2 times/day for at least 2 wks. *Increase GI absorption in iron deficiency states*: PO: 50-200mg/day. Refer BNFC for children dose. | |
| Notes | • Recommended Daily Allowance (RDA) : Male 90 mg/day, female 75 mg/day, max 2000 mg/day<br>• Tolerance may occur with prolonged large doses, resulting in deficiency |

| | |
|---|---|
| | symptoms when intake is reduced to normal<br>• Prolonged/excessive use of chewable preparation may cause tooth enamel erosion<br>• Refrigerate upon opening |

| **CALCITRIOL (ROCALTROL)** | |
|---|---|
| Prep<br>Policy | Cap 0.25 mcg<br>(A*: Endocrinologists, ENT Specialists, Nephrologists & Paediatrics) |
| *Postmenopausal osteoporosis*: 0.25 mcg 2 times/day. *Renal osteodystrophy (dialysis pt)*: Initially 0.25 mcg/day, then adjust dose accordingly* with increment of 0.25 mcg/day at 2-4 weeks interval, 0.25 mcg every other day for normal-slightly reduced levels, most pts respond to 0.5-1mcg/day, pulse therapy of 0.1 mcg/kg/week split into 2-3 equal doses at night is effective even in cases refractory to continuous therapy, max total cumulative dose 12 mcg/wk. *Secondary hyperparathyroidism & resultant metabolic bone disease in predialysis pts with moderate-severe renal failure*: Initially 0.25 mcg/day, increased to 0.5 mcg/day if necessary. *Hypoparathyroidism, rickets*: Initially 0.25 mcg in the morning, adjust accordingly* | |
| Admin | Swallow whole ±  Do not open capsules. |
| Notes | • *Dose adjusted to biochemical parameters & clinical manifestations<br>• Active form of Vit $D_3$ (1α, 25-dihydroxycholecalciferol) |

| **MULTIVITAMIN** | |
|---|---|
| Prep | Inj 5 mL in each Ampoule 1 & 2 (Parentrovite), Tab, Syrup, Infant Drop 30 mL (Appeton;alcohol-free) |
| *Acute conditions:* IV **Adult & Child ≥ 14 yrs** 1 pair ampoules 2 times/day for 2-3 days, then 1 pair/day for 5-7 days. *Less serious conditions:* 1 pair/day for 3-7 days; **Child 6-14 yrs** 1/3 – 2/3 adult dose; **Child < 6 yrs** 1/10 –1/4 adult dose. PO (Tab): **Adult & Child > 7 yo** 1-2 tab/day. Syrup **Child ≥ 1 yo** 5 mL/day. Drop: **Infant 0-12 mths** 1 mL/day | |
| Admin | • Inj: Mix Ampoule 1 & 2, administer as slow injection ( 10 minutes)<br>• Tab:  <br>• Infant Drop: Drop directly into mouth/mixed with food, fruit juice. Do not use after 3/12 of opening. |
| Notes | • Inj: Per 5 mL Ampoule 1 -Vit $B_1$ 250 mg, Vit $B_2$ 4 mg, Vit $B_6$ 50 mg. Per 5 mL Ampoule 2 - D-Sodium Pantothenate 5 mg, Dextrose BP 1000 mg, Nicotinamide BP 160 mg, Ascorbic Acid as Sodium Salt 500 mg<br>• Tab: Per tab -VitA 500 iu, Vit $B_1$ 3.5 mg, Vit $B_6$ 1 mg, Vit $B_{12}$ 2 mcg, Vit C 50 mg, Vit $D_3$ 50 iu, Nicotinamide 15 mg, Calcium-D-Pantothenate 4 mg. Gelatin used is from bovine origin.<br>• Syrup: Vitamins & alcohol contents vary with product. Store <25°C. Protect from light.<br>• Infant Drop: Per1 mL -Vit A 1500 iu, Vit $D_3$ 400 iu, Vit E 5 iu, Vit $B_1$ 0.5 mg, Vit $B_2$ 0.6 mg, Vit $B_6$ 0.4 mg, Vit $B_{12}$ 2 mcg, Nicotinamide 8 mg, Vit C 35 mg, Taurine 20 mg, L-Lysine HCl 20 mg |

| **NEW OBIMIN** | |
|---|---|
| Prep<br>Policy | Tablet<br>(A*: O&G doctors & pregnant women in BTS only) |
| *Supplements for pregnant & lactating women*: :PO: 1 tab daily | |

| | |
|---|---|
| Notes | • Per tab: Vit A 3000 iu, Vit D 400 iu, Vit C 100 mg, Vit $B_1$ 10 mg, Vit $B_2$ 2.5 mg, Vit $B_6$ 15 mg, Vit $B_{12}$ 4 mcg, Niacinamide 20 mg, Calcium pantothenate 7.5 mg, Folic acid 1 mg, Ferrous fumarate 30 mg, Calcium lactate 32.5 mg, Cupric sulphate 100 mcg, Potassium iodide 100 mcg |

| **PYRIDOXINE HCL (VITAMIN $B_6$)** | |
|---|---|
| Prep | Tab 10 mg |
| *Deficiency states*: 20-50 mg up to 3 times/day. *Isoniazid neuropathy*: 10-20 mg/day for prophylaxis, 50 mg 3 times/day for treatment. *Idiopathic sideroblasticanemia*: 100-400 mg/day in divided doses. *Premenstrual syndrome*: 50-100 mg/day | |

| **RIBOFLAVIN (VITAMIN $B_2$)** | |
|---|---|
| Prep | Tab 3 mg |
| Ariboflavinosis (riboflavin deficiency): PO: **Adult** 5-30 mg/day in divided doses **Child**: 2.5-10mg/day in divided doses. | |
| Admin | With  |

| **THIAMINE (VITAMIN $B_1$)** | |
|---|---|
| Prep | Inj 100 mg/mL (1 mL; unregistered product), Tab 10 mg (Mononitrate) |
| *Alcohol withdrawal syndrome*: IM/IV 100 mg/day for several days, then PO 50-100 mg/day. *Wernicke's encephalopathy*: IV 100 mg, then IM/IV 50-100 mg/day until consuming a regular, balanced diet. Alternatively, for prophylaxis IV 250 mg/day for 3-5 days, for treatment IV 500 mg 3 times/day for 3 days & if pt responds, continue with IM/IV 250 mg/day for 5 days/until clinical improvement.*Thiamine deficiency (beriberi)*: IM/IV 5-30 mg tds (critically ill), then PO 5-30mg/day (single/3 divided doses) for 1 mth. *Mild chronic deficiency*: PO 10-25 mg/day. *Severe deficiency*: PO 200-300 mg/day | |
| Admin | IV: Dilute in 50-100 mL NS/D5, run IV infusion over 30 mins |

| **VITAMIN $B_1$, $B_6$ & $B_{12}$ (NEUROBION-G)** | |
|---|---|
| Prep | Inj Neurobion 5000 (3 mL), Tablet |
| *Polyneuritis, neuralgia, facial palsy, herpes zoster, diabetic neuropathy, optic neuritis, numbness of the extremities, drug-induced neuropathy, hyperemesis gravidarum, Vit B deficiency, CVA*: Deep IM (intragluteal) 1 ampoule daily PO 1 tab 2-3 times/day | |
| Notes | •Inj contains benzyl alcohol – should be avoided in < 2 yo & neonates<br>•Per 3 mL Inj:Vit $B_1$ 100 mg, $B_6$ 100 mg & $B_{12}$ 5000 mcg<br>•Per tab: Vit $B_1$ 100 mg, $B_6$ 200 mg & $B_{12}$ 200 mcg |

| **VITAMIN B COMPLEX** | |
|---|---|
| Prep | Tab |
| *Dietary supplement*: 1-2 tab daily. | |
| Notes | Per tab: Vit $B_1$1 mg, Vit $B_2$ 1.5 mg, Nicotinamide 10 mg |

| **VITAMINS, FAT-SOLUBLE (VITALIPID N ADULT, VITALIPID N INFANT)** | |
|---|---|
| Prep | Inj 10mL |
| *Fat soluble vitamins A, $D_2$, E and $K_1$ for parenteral nutrition:* **Adult & Child ≥ 11yrs** Vitalipid N Adult 10 mL/day; **Infants >2.5kg & Child <11yrs** Vitalipid N Infant 10 mL/day; **Preterm & Infants < 2.5 kg** 4 mL/kg/day | |
| Admin | Added to Intralipid 1 hour before start of infusion & used within 24 hours. |

| | |
|---|---|
| Notes | • Vitalipid N Adult: Per 10 mL - Vit A 0.99 mg (3300 IU), Vit $D_2$ 5 mcg (200 IU), Vit E 9.1 mg (10 IU), Vit $K_1$ 150 mcg<br>• Vitalipid N Infant: Per 1 mL - Vit A 69 mcg (230 IU), Vit $D_2$1 mcg (40 IU), Vit E 640 mcg (0.7 IU), Vit $K_1$ 20 mcg |

| **VITAMINS, WATER-SOLUBLE (SOLUVIT-N)** | |
|---|---|
| Prep | Inj 10 mL |
| *Water soluble vitamins for parenteral nutrition:* **Adult & Child > 10 kg** 10 mL/day; **Child < 10 kg** 1 ml/kg/day, max 10 mL/day | |
| Notes | Per 10 mL: Vit $B_1$ 2.5 mg, Vit $B_2$ 3.6 mg, $B_6$ 4 mg, Nicotinamide 40 mg, Pantothenic acid 15 mg, Cyanocobalamin 5 mcg, Vit C 100 mg, Biotin 60 mcg, Folic acid 0.4 mg |

## A12 MINERAL SUPPLEMENTS

| **CALCIUM CARBONATE** | |
|---|---|
| Prep | Tab 500 mg (Elemental Ca 200 mg) |
| *Hypocalcemia*: 400 mg – 2 g Calcium in divided doses after meals. *Hyperphosphatemia*: 2.5-17 g/day Ca carbonate in divided doses with meals. *Antacid*: 500 mg (1 tab) 3-4 times/day after meals | |
| Admin | •Chew thoroughly, take with large quantity of water/juice  |
| Notes | • Should not take other oral medications within 1-2 hrs of Ca - rate/extent of absorption of oral medications may vary<br>• Separate dose from levothyroxine by at least 4 hrs – Ca reduces its absorption |

| **CALCIUM CHLORIDE** | |
|---|---|
| Prep | Inj 10%, 1 g/10 mL |
| Policy | Unregistered product |
| *Acute hypocalcaemia*: IV infusion **Adult** Initially 3.5 - 7 mmol Ca; **Child** Initially 0.5 – 3.5 mmol Ca/kg; Doses repeated every 1-3 days as necessary. *Hypocalcaemictetany*: IV infusion **Adult** 2.25 – 8 mmol Ca, repeated until response achieved; **Child** 0.25 – 0.35 mmol Ca/kg, repeated every 6-8 hrs until response achieved. *Hyperkalaemia with secondary cardiac toxicity*: IV Infusion **Adult** 1.12 – 7 mmol Ca, repeated after 1-2 mins if necessary, ECG monitoring required | |
| Admin | • Not for IM/SC<br>• IV infusion: max concentration 20 mg/mL in NS/D5, over 1 hr or max 45-90 mg/kg/hr preferably via central/deep vein<br>• Slow IV bolus: Avoid rapid admin, max rate 100 mg/min,may give over 2-5 mins if rapid serum Ca increase is required<br>• Do not infuse in the same IV line as phosphate solutions |
| Notes | • Per 10 mL Calcium chloride dihydrate: 6.8 mmol = 13.6 mEqCa, 13.6 mmol = 13.6 mEq Chloride ions<br>• 3.7 g Calcium chloride = 1 g elemental Ca = 25 mmol elemental Ca = 50 mEq elemental Ca |

| **CALCIUM GLUCONATE** | |
|---|---|
| Prep | Inj 10% (10 mL) |
| *Acute hypocalcaemia*: **Adult** Initially 7-14 mEq; **Child** Initially 1-7 mEq; **Infant** less than 1 mEq; Repeat every 1-3 days if necessary. *Hypocalcaemia tetany*: **Adult** 4.5-16 mEq until response occurs, max daily dose 67.5 mEq (15 g Ca gluconate); **Child** 0.5-0.7 mEq/kg, repeat every 6-8 hrs until response occurs; **Neonate** 2.4 mEq/kg/day in divided doses. *Adjunct in severe hyperkalaemia*: **Adult** 4.5-9 mEq, repeat as required under ECG control. *Hypermagnesemia*: **Adult** Initially 7 mEq, adjusted to response. *Cardiac resuscitation*: **Adult** 7-14 mEq; **Child** 0.5 mEq. | |
| Admin | • Slow IV injection (as 10% solution) at rate of 1.5-5 mL/min or intermittent infusion at max rate 2 mL/min (0.9 mEq Ca ions/min), via a small needle into a large vein to avoid rapid serum Ca increase & extravasation<br>• Infusion: dose up to 1gm, dilute up to 50mL NS, D5 (Run over 30 mins) Dose > 1gm, may be diluted up to 100mL ( Run over 1 hr) . Stable for 24 hrs. Max Infusion rate: 0.9mEq/min<br>• Should not further diluted with phosphate-containing infusion fluids<br>• Not for IM/SC - risk of tissue necrosis, sloughing, abscess formation, extravasation |
| Notes | • Per 10 mL: Ca gluconate BP 953 mg, Ca saccharate USP 30 mg<br>• Per 1 mL: Ca ions 0.22 mmol = 0.45 mEq = 8.9 mg |

| **CALCIUM LACTATE** | |
|---|---|
| Prep | Tab 300 mg |
| *Dietary supplement*: PO: **Adult**: 1 tab 3 times/day after meals | |
| Admin | To be taken after  |
| Note | • 1 tab = 39 mg of elemental Calcium = 1mmol/tab |

| **MAGNESIUM SULPHATE** | |
|---|---|
| Prep | Inj 49.3%, 2.465 g Mg Sulphate (5 mL) |
| *Mild hypomagnesaemia*: IM 1 g (8mEq) every 6 hrs x 4 doses. *Severe hypomagnesaemia*: IM 0.25 g/kg over 4 hrs or slow IV infusion over 3 hrs 5 g. *Toxaemia of pregnancy (preeclampsia/eclampsia)*: Initially IV 4 g, then IM 4-5 g into each buttock. Then another 4-5 g into alternate buttocks every 4 hrs if needed. Alternatively, initial IV dose may be followed by IV infusion 1-2 g/hr. Max adult dose 30-40 g/day | |
| Admin | • IM:**Adult** Dilution not required, but can dilute each ampoule by adding up to 5 mL of compatible solution, or to a concentration of 250-500 mg/mL (25-50%) is satisfactory; **Infant/Child** Concentration 200 mg/mL (20%)<br>• IV infusion: Dilute to 200 mg/mL (20%) or dilute each ampoule by adding at least 7.5 mL of compatible solution, max rate 2 g/hr to avoid hypotension, 4 g/hr has been given in emergency of eclampsia/seizure<br>• IV push: Dilute first, max rate 150 mg/min, hypotension & asystole with rapid admin<br>• Compatible solution: NS, D5, Lactated Ringers |
| Notes | • Per 1 mL: 493 mg Mg sulphate (2 mmol = 4 mEq Mg, 2 mmol = 4 mEq Sulphate)<br>• For other indications, refer Chapter C01 Cardiac Therapy |

| **ORGANIC PHOSPHATE SOLUTION (GLYCOPHOS)** | |
|---|---|
| Prep | Inj 20 mL (Sodium Glycerophosphate Anhydrous 216 mg) |
| *Sterile phosphate concentration for intravenous nutrition*: **Adult** 10-20 mmol/day;**Infant & neonate** 1-1.5 mmol/kg/day | |
| Admin | Use within 24 hrs |
| Notes | 1 mL Glycophos: 1 mmol Phosphate & 2 mmolNa |

| **POTASSIUM CHLORIDE** | |
|---|---|
| Prep | Inj 10% (1 g/10 mL), Tab 600 mg (Slow K), Mixture 1 g/10 mL |
| *Prevention of hypokalaemia*: PO: **Adult** 20-40 mmol/day in 1-2 divided doses; **Child** 1-2 mmol/kg/day in 1-2 divided doses.*Treatment of hypokalaemia*: PO: **Adult** For asymptomatic-mild cases, 40-100 mmol/day in 2-5 divided doses (limit 20-25 mmol/dose to avoid GI discomfort); For mild-moderate cases, 120-240 mmol/day in 3-4 divided doses (limit 40-60 mmol/dose); **Child** Initially 1-2 mmol/kg, adjust accordingly. IV intermittent infusion: **Adult** For peripheral/central line ≤ 10 mmol/hr, central line with ECG monitoring > 10 mmol/hr. For K > 2.5 mmol/L, max infusion rate 10 mmol/hr, max concentration 40 mmol/L, max daily dose 200 mmol. For K <2mmol/L symptomatic cases, max infusion rate via central line with ECG monitoring 40 mmol/hr, up to 400 mmol/day; **Child** 0.5-1 mmol/kg/dose, max dose 40 mmol, close monitoring by physician at bedside with ECG monitoring if infusion > 0.5 mmol/kg/hr | |
| Admin | • IV infusion: Peripheral line : max concentration 100 mmol/L, max rate 10 mmol/hr. Central line : max concentration 200-400 mmol/L, max rate 40 mmol/hr<br>• Oral: Take with or after with plenty fluid (oral more irritating, liquid is preferable). Swallow tab whole, do not chew or crush |
| Notes | • 1 g KCl = 524 mg = 13.4 mmol = 13.4 mEq K<br>• Onset of action: Tab SR formulation - 2 hrs,liquid - 1 hr<br>• KCl preferred in hypoK with hypochloraemic alkalosis; K citrate preferred in hypoK with metabolic acidosis (renal tubular acidosis) |

| **POTASSIUM CITRATE (UROCIT-K)** | |
|---|---|
| Prep | Tab 1080 mg |
| *Renal tubular acidosis with calcium stones, hypocitraturic calcium oxalate nephrolithiasis of any etiology& uric acid lithiasis with/without calcium stones. For severe hypocitraturia (urinary citrate <150 mg/day)*: 20 mEq 3 times/day or 15 mEq4 times/day. *Mild – moderate hypocitraturia (>150 mg/day)*: 10 mEq3 times/day. Max 100 mEq/day | |
| Admin | With/within 30 mins after  bedtime snack. Do not crush, chew, suck |
| Notes | • 1080 mg = 10 mEq Potassium citrate<br>• Limit salt intake. Encourage high fluid intake (at least 2 L/day) |

| **POTASSIUM CITRATE MIXTURE BP** | |
|---|---|
| Prep | Oral Solution 3 g/10 mL |
| *Hypokalaemia:* **Adult** For prevention, 16-24mmol/day in 2-4 divided doses; For treatment, 40-100 mmol/day in 2-4 divided doses; **Child** 1-4 mmol/kg/day in divided doses | |
| Admin | Taken well diluted with water |
| Notes | • Not to be confused with Syrup Polycitra(EX) (Refer Chapter G Genito |

| | |
|---|---|
| | Urinary System & Sex Hormones)<br>• Per 10 mL: 28 mmol Potassium, 9.2 mmol Citrate |

| **POTASSIUM DIHYDROGEN PHOSPHATE** | |
|---|---|
| Prep | Inj 10 mmol/10 mL |
| *Severe hypophosphataemia*: **Adult** IV infusion over 12 hrs: Up to 10 mmol phosphate, repeat at 12 hrs interval until serum phosphate > 0.3 mmol/L; **Child** IV infusion over 6 hrs 0.15-0.33 mmol/kg, repeat at 6 hrs interval until serum phosphate > 0.6 mmol/L, dose should not exceed max adult dose, max infusion rate 0.2 mmol/kg/hr | |
| Admin | • Slow IV infusion over at least 4 hrs- avoid Phosphate intoxication<br>• Dilute dose in 500-1000mL NS/D5,incompatible with Ca & Mg-containing solutions (Usually up to 40mmol Potassium content /1000mL)<br>• If fluid restricted, dilute 1 vial into 50-100mL NS/D5%, run over 90 mins. |
| Notes | • Per 10 mL: 1.361 g Potassium phosphate monobasic in WFI<br>• Per 1 mL: 1 mmol K, 1 mmol Phosphate, 2 mmol Hydrogen ions |

| **SODIUM ACID PHOSPHATE (PHOSPHATE SANDOZ)** | |
|---|---|
| Prep | Effervescent Tab 500 mg |
| Policy | A*: Nephrologists & Paediatrics; unregistered product |
| *Hypercalcaemia*: **Adult** Up to 6 tabs/day;**Child < 5 yrs** Up to 3 tabs/day. *Vit D resistant hypophosphateaemicosteomalacia:* **Adult** 4-6 tabs/day. *Vit D resistant rickets*: **Child < 5 yrs** 2-3 tabs/day | |
| Admin | Dissolve in 1/3 – 1/2 glass of water. |
| Notes | Per tab: 1.936 g Sodium acid phosphate (123 mg = 3.1 mmol K; 469 mg = 20.4 mmol Na) |

| **SODIUM CHLORIDE** | |
|---|---|
| Prep | Crystals 0.5 g, 1 g, 2 g & 3 g |
| *Replacement*: PO 1-2 g 3 times/day, up to 12 g daily in severe cases | |
| Admin | Given in water. |
| Notes | • 1g NaCl: 394 mg = 17.1mmol= 17.1mEq Na<br>• For topical use, Refer Chapter R Respiratory System & Chapter S Sensory Organs |

| **SODIUM DIHYDROGEN PHOSPHATE** | |
|---|---|
| Prep | Powder for solution 9.7 g/packet (EX) |
| *Hypophosphatemia:* PO 8-16 mmol 4 times/day after meals & at bedtime, adjust accordingly, up to 100 mmol/day | |
| Admin | •  Dissolve 1 packet (9.7 g) into 50 mL freshly boiled, cooled water |
| Notes | • Each 10 mL contains 16 mmol Phosphate<br>• Anhydrous formulation containing sodium phosphate monobasic, monosodium phosphate, sodium biphosphate<br>• Each g of monobasic sodium phosphate (anhydrous) contains about 8.3 mmol of sodium and of phosphate. |

# CLASS B. BLOOD AND BLOOD FORMING ORGANS

## B01 ANTITHROMBOTIC AGENTS

- Platelets counts are recommended in patients receiving heparin (including LMWH) for longer than 5 days. Heparin should be stopped immediately in those who develop thrombocytopenia or 50% reduction of platelet counts.

| **ABCIXIMAB (REOPRO)** | |
|---|---|
| Prep<br>Policy | Inj 10mg/5mL<br>A*: Cardiologist only |
| Dose:<br>*Adjunct to unfractionated heparin and aspirin for prevention of ischaemic cardiac complications in patients undergoing Percutaneous Coronary Intervention*: IV bolus (over 1min): 250mcg/kg 10-60min prior to the intervention followed by IV infusion (over 12hrs): 0.125mcg/kg/min (max 10mcg/min). | |
| Admin | IV infusion: Dilute 10mg in NS or D5% up to 250mL (final concentration: 40mcg/mL). |
| Notes | • Fridge item.<br>• Do not shake vial and always withdraw drug through a 0.22 or 5.0micron syringe filter. |

| **ACETYLSALICYLIC ACID (ASPIRIN-G)** | |
|---|---|
| Prep | Soluble tab 300mg |
| Dose:<br>*Anti-platelet therapy:* 75- 300mg once daily | |
| Admin | With or after  |

| **ALTEPLASE/rtPA (ACTILYSE)** | |
|---|---|
| Prep<br>Policy | Inj 50mg (A*: Cardiologist, Neonatologist and Emergency Dept only), Eye drops (EX) 0.25mg/mL (A*: Ophthalmologist only) |
| a) *Acute MI*:<br>90-minute (Accelerated) Dose Regimen<br>Normal weight patient: • 15mg as IV bolus • Followed by 50mg as an infusion over the first 30mins. • Followed by an infusion of 35mg over 60mins (max total dose: 100mg).<br>Patient with body weight < 65kg: • 15mg as IV bolus • Followed by 0.75mg/kg body weight over 30mins (max 50mg). • Followed by an infusion of 0.5mg/kg over 60mins (max 35mg).<br>b) *Pulmonary Embolism*: IV Bolus (over 1-2min): 10mg, followed by IV Infusion (over 2hrs): 90mg. The total dose should not exceed 1.5 mg/kg in patients <65 kg.<br>c) *Thrombosis in neonates*: Refer to relevant specialist for dosing recommendation. | |
| Admin | IV bolus: Reconstitute Alteplase powder with 50mL WFI provided (Conc: 1mg/mL).<br>IV infusion: Further dilute the reconstituted solution with NS, below minimal concentration of 200mcg/mL is not recommended. |

| | |
|---|---|
| Notes | Acute MI:<br>• Adjunctive antithrombotic therapy is recommended according to the current international guidelines. |
| | Pulmonary Embolism:<br>• After treatment with Actilyse®, heparin therapy should be initiated (or resumed) when aPTT values are less than twice the upper limit of normal. The infusion should be adjusted according to maintain aPTT between 50-70secs (1.5 to 2.5-fold of the reference value).<br>• For other indications, refer to chapter ***S01 Ophthalmologicals***. |

| **CILOSTAZOL (PLETAAL)** | |
|---|---|
| Prep<br>Policy | Tab 100mg<br>A*: Vascular Surgeon only (Max. supply: 6 months) |
| Dose:<br>*Intermittent claudication in patients without rest pain and no peripheral tissue necrosis*: 100mg bd. | |
| Admin | 30mins before or 2hrs after  |
| Notes | • Reduce dose to 50mg 2x/day with concomitant use of clarithromycin, erythromycin, itraconazole, ketoconazole, diltiazem, omeprazole, or with potent inhibitors of CYP3A4 or CYP2C19.<br>• Patients may respond as early as 2-4wks after the initiation of therapy but treatment for up to 12wks may be needed before a beneficial effect is experienced.<br>• Patients should be advised to report any unexplained bleeding, bruising, sore throat, or fever. A blood count should be performed and the drug stopped immediately if there is suspicion of a blood dyscrasia. |

| **CLOPIDOGREL (PLAVIX)** | |
|---|---|
| Prep<br>Policy | Tab 75mg & 300mg<br>A*: Cardiologist, Neurologist and Endocrinologist only |
| Dose: ONLY for:<br>a) *Patients undergoing Percutaneous Coronary Intervention (PCI) in combination with aspirin*: 300mg stat at least 6hrs before procedure followed by 75mg once daily post-stenting (Max. supply: 6 months only).<br>b) *Postoperative antiplatelet therapy in patients underwent CABG*: 75mg once daily (Max. supply: 6 months only).<br>c) *Acute STEMI, NSTEMI and Unstable angina*: 300mg stat then 75mg once daily; loading dose omitted if patient is >75yo. (Max. supply: 3 months only).<br>d) *Prevention of atherosclerotic events in patients with recent MI, stroke or established peripheral arterial disease*: 75mg once daily (Max. supply: 3 months only).<br>e) *As 2nd/3rd line treatment in patients who are intolerant to Aspirin and Ticlopidine (case to case basis only)*. | |
| Admin | ±  |
| Notes | • Discontinue 7 days before elective surgery if antiplatelet effect not desirable.<br>• In patients referred for elective CABG, discontinue at least 5 days before |

| | |
|---|---|
| | surgery (*Class I, Level of evidence: B*) to limit blood transfusion; for urgent CABG, discontinue for at least 24hrs to reduce major bleeding complications (*Class I, Level of evidence: B*)*.<br>*2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery. |

| **ENOXAPRIN (CLEXANE)** | |
|---|---|
| Prep<br>Policy | Pre-filled syringe 20mg/0.2mL, 40mg/0.4mL & 60mg/0.6mL<br>A*: Specified indications only |
| Dose:<br>a) *Prophylaxis of thromboembolism (in-patient use only): For bed-ridden medical patients due to acute illness:* SC: 40mg once daily until patient is ambulant or max 14 days. *For surgical patients: monce dailyerate risk*: SC: 20mg 2hrs before surgery then 20mg once daily for 7-10 days; *high risk (e.g. orthopaedic surgery)*: SC: 40mg 12hrs before surgery OR 20mg 2hrs before surgery then 40mg once daily for 7-10 days.<br>b) *Treatment of thromboembolism (in-patient use only)*: SC: 1mg/kg every 12hrs or 1.5mg/kg once daily, treatment should not exceed 10 days. Initiate oral anticoagulant therapy within 72 hrs unless contraindicated. Enoxaparin should be stopped when adequate oral anticoagulation is established.<br>c) *Treatment of unstable angina/NSTEMI*: SC: 1mg/kg every 12hrs (in-patient use only; max. 4 days treatment).<br>d) *Treatment of acute STEMI*: **Adult (<75 yo.)** IV bolus: 30mg followed by SC: 1mg/kg, then every 12hrs (max 100mg for the first 2 SC doses). **Adult (≥ 75yo.)** SC: 0.75mg/kg q12hrs (max. 75mg for the first 2 doses only). When administered in conjunction with a thrombolytic, enoxaparin should be given between 15mins before and 30 mins after the start of thrombolytic therapy.<br>e) *Nephrotic syndrome and out-patient use for primary antiphospholipid syndrome in pregnancy*: Refer to relevant specialist for dosing recommendation. | |
| Admin | IV bolus: to be injected into a venous line. Avoid mixing with any other medicinal products; flush the injection line with sufficient amount of NS/ D5% before and after administration. |
| Notes | • Porcine origin.<br>• Store below 25°C. Do not freeze pre-filled syringes.<br>• Pre-filled syringe 60mg/0.6mL is graduated. |

| **FONDAPARINUX SODIUM (ARIXTRA)** | |
|---|---|
| Prep<br>Policy | Pre-filled syringe 2.5mg/0.5mL (A*: Orthopedic, Surgeon, Cardiologist and O&G specialist only.) & 7.5mg/0.6mL (A*: Cardiologist, Surgeon and Hematologist only.) |
| Dose:<br>a) *Prevention of venous thromboembolic events:*<br>*(i) in patients undergoing major orthopaedic surgery of the lower limbs (such as hip fractures, major knee surgery or hip replacement surgery) and in patients undergoing abdominal surgery who are at risk of thromboembolic events*: SC: 2.5mg 6 hrs post-op (after haemostasis has been established), then 2.5mg once daily for at least 5-9 days (longer after hip surgery).<br>*(ii) in gynae patients undergoing surgery:* SC: 2.5mg once daily (ONLY for Muslim patients & in-patient use). | |

| | |
|---|---|
| b) *Treatment of DVT & Pulmonary Embolism (ONLY for Muslim patients & for in-patient use)*: SC: body-weight <50kg, 5mg once daily; 50-100kg, 7.5mg once daily; >100kg, 10mg once daily. Fondaparinux should be continued for at least 5 days and until INR ≥2 for at least 24hrs.<br>c) *Acute Coronary Syndrome, Non ST-Elevation MI & Unstable Angina*: SC: 2.5mg once daily. | |
| Notes | • Fondaparinux is not recommended in patients with CrCl < 30mL/min.<br>• In patients undergo CABG, discontinue Fondaparinux 24hrs before and may be restarted 48hrs post-operatively. |

| **HEPARIN SODIUM (HEPARINOL, HEPARIN SALINE)** | |
|---|---|
| Prep | Inj 5,000IU/5mL, 25,000IU/5mL & 100IU/10mL (Heparin Saline) |
| Dose:<br>*Treatment of DVT, PE, Unstable angina & Acute peripheral arterial occlusion*: IV Injection: Loading dose of 5,000IU or 75IU/kg (10,000IU *in severe pulmonary embolism*) followed by Continuous IV Infusion: 18IU/kg/hr (or as heparin protocol); with daily laboratory monitoring for dose adjustment.<br>*Treatment of DVT:* IV Injection: Loading dose of 5,000IU or 75IU/kg, followed by SC: 15,000IU every 12hrs (with daily laboratory monitoring for dose adjustment).<br>*Thromboprophylaxis in medical patients*: SC: 5,000IU every 8-12hrs.<br>*Thromboprophylaxis in general surgery*: SC: 5,000IU 2hrs pre-surgery, then every 8-12hrs for 7 days or until patient is ambulant. *During pregnancy*: 5,000-10,000IU every 12hrs with monitoring.<br>*To maintain patency of catheters, cannulas etc*: 10-200IU of Heparin saline flushed through every 4hrs – every 8hrs or prn. | |
| Admin | IV infusion: Dilute 25,000IU Heparin with NS/ D5%, up to 50mL (concentration of dilution = 500IU/mL). Invert infusion solutions at least 6 times to prevent pooling. |
| Notes | • Prevention of prosthetic heart valve thrombosis in pregnancy calls for specialist management.<br>• Heparinol® contains benzyl alcohol, its use should be avoided in children below 2yo. and should not be used in neonates. |

| **PRASUGREL (EFFIENT)** | |
|---|---|
| Prep<br>Policy | Tab 5mg & 10mg<br>A*: Cardiologist only (Max supply: 6 months) |
| Dose:<br>*In combination with aspirin for prevention of atherothrombotic events in patients with Acute Coronary Syndrome (ACS) undergoing Percutaneous Coronary Intervention (PCI) and fulfilled the following criteria (i) <75yo.; (ii) Weight >60kg; (iii) without history of CVA or TIA* : Loading dose 60mg, then 10mg once daily. | |
| Admin | ±  |

| | |
|---|---|
| Notes | • Discontinue 7 days before elective surgery if antiplatelet effect not desirable.<br>• In patients referred for elective CABG, prasugrel should be discontinued for at least 7 days (*Class I, Level of Evidence: C*) to limit blood transfusions*.<br>*2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery. |

| **RIVAROXABAN (XARELTO)** | |
|---|---|
| Prep<br>Policy | Tab 10mg<br>A*: Orthopedic surgeon only |
| Dose:<br>*Prophylaxis of venous thromboembolism following knee replacement surgery*: 10mg once daily for 2 weeks, starting 6-10hrs after surgery.<br>*Prophylaxis of venous thromboembolism following hip replacement surgery*: 10mg once daily for 5 weeks, starting 6-10hrs after surgery. | |
| Admin | ±  |

| **STREPTOKINASE (STREPTASE)** | |
|---|---|
| Prep<br>Policy | Inj 1.5 million IU<br>A*: Cardiologist & Neonatologist only |
| Dose:<br>*Acute MI*: IV infusion: 1.5 million IU over 60 min.<br>*DVT, pulmonary embolism & acute arterial thromboembolism*: IV infusion: Loading dose: 250,000 IU over 30min. Maintenance: 100,000 IU/hr for up to 12-72hrs according to condition with monitoring of clotting parameters.<br>*Thrombosis in neonates*: Refer to relevant specialist for dosing recommendation. | |
| Admin | Reconstitute Streptase® with 5mL NS.<br>Suggested dilution for *Acute MI*: Further dilute the above solution with NS or D5% up to 100-150mL.<br>Suggested dilution for *Pulmonary Embolism*: Further dilute the above solution to 150mL with NS or D5%. Therefore, 250,000 IU = 25mL over 30min and 100,000IU/hr = 10mL/hr. |
| Notes | • Store at 2 - 25°C.<br>• Reconstituted solution is stable for 24hrs if stored at 2 - 8°C. |

| **TENECTEPLASE (METALYSE)** | |
|---|---|
| Prep<br>Policy | Inj 10,000IU (50mg)<br>A* Cardiologist & Emergency Dept only |
| Dose:<br>*Acute MI* : Slow IV (over 5-10 secs): dosage regimen as below: | |

| Patient's weight | Tenecteplase Dose | Volume to be injected |
|---|---|---|
| < 60kg | 30mg (6,000IU) | 6mL |
| 60 – < 70kg | 35mg (7,000IU) | 7mL |
| 70 – < 80kg | 40mg (8,000IU) | 8mL |
| 80 – < 90kg | 45mg (9,000IU) | 9mL |
| ≥ 90kg | 50mg (10,000IU) | 10mL |

| | |
|---|---|
| Admin | Reconstitute Metalyse® powder with 10mL WFI provided. Conc: 5mg (1,000IU)/mL.<br>Metalyse® is incompatible with dextrose solution and no other product should be added to solution or infusion line.<br>Flush injection line with sufficient amount of NS before and after administration. |
| Notes | • Adjunctive antithrombotic therapy is recommended according to the current international guidelines.<br>• Store below 30°C and protect from light.<br>• Reconstituted solution is stable for 24hrs at 2-8°C. |

| **TICAGRELOR (BRILINTA)** | |
|---|---|
| Prep<br>Policy | Tab 90mg<br>A*: Cardiologist only (Max supply: 6 months) |
| Dose:<br>*In combination with aspirin for the prevention of atherothrombotic events in patients with Acute Coronary Syndrome*: Loading dose of 180mg, then 90mg 2 times/day. | |
| Admin | ±  |
| Notes | • Discontinue 7 days before elective surgery if antiplatelet effect not desirable.<br>• In patients referred for elective CABG, discontinue at least 5 days before surgery (*Class I, Level of Evidence:* B) to limit blood transfusion; for urgent CABG, discontinue for at least 24hrs to reduce major bleeding complications (*Class I, Level of Evidence: B*)*.<br>*2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery.<br>• US FDA warning: Maintenance doses of aspirin above 100 mg/day may reduce the effectiveness of ticagrelor and should be avoided. |

| **TICLOPIDINE (TICLID-G)** | |
|---|---|
| Prep<br>Policy | Tab 250mg<br>A: Specialist and *Pusat Perubatan Primer* only |
| Dose:<br>*Maintenance of patency of coronary artery bypass graft (CABG), maintenance if patency of access sites in patients on chronic haemodialysis, risk reduction of thromboembolic stroke in patients who have experienced stroke precursors and those who had complete stroke & prevention of subacute occlusions following coronary stenting*: 250mg 2 times/day. | |
| Admin |  |
| Notes | • CBCs with differential and platelet counts should be performed at the start of treatment and then every 2 wks for the 1st 3mths and within 15 days after discontinuation of therapy (if stopped within the 1st 3mths). |

| **TINZAPARIN (INNOHEP)** | |
|---|---|
| Prep<br>Policy | Inj 20,000 anti-Xa IU/2mL (A*: Nephrologist only), Pre-filled syringe 10,000 anti-Xa IU/0.5mL & 3,500 anti-Xa IU/0.35mL (A*: Orthopedic surgeon, Haematologist, Nephrologist and O&G specialist only) |

Dose:

a) *Treatment of DVT and PE not amounting to hemodynamic instability*: SC: 175 anti-Xa IU/kg body weight once daily until adequate oral anti-coagulation is established.

b) *Prevention of DVT in patients undergoing general & orthopaedic surgery*: *moderate risk*: SC: 3,500 anti-Xa IU 2 hours pre-op and then once daily for 7 to 10 days post-operatively. *High risk*: SC: 4,500 anti-Xa IU 12hrs pre-op, then once daily OR 50 anti-Xa IU/kg body weight 2hrs pre-op then once daily. Continue treatment until patient is mobilising.

c) *Prevention of clotting in in-dwelling IV lines for extracorporeal circulation & haemodialysis* (using 20,000 anti-Xa IU/2mL vial):
   (i) *Short-term HD (<4hrs):* IV bolus/ Inject into the arterial side of the dialyser (at the beginning of dialysis): 2,000 - 2,500 anti- Xa IU.
   (ii) *Long-term HD (>4hrs):* IV bolus/ Inject into the arterial side of the dialyser (at the beginning of dialysis): 2,500 anti-Xa, followed by IV Infusion (via the extracorporeal circuit): 750 anti-Xa IU/hour.

   Increase/decrease bolus dose, if required, in steps of 250 – 500 anti- Xa IU, until a satisfactory response is obtained.

d) *Out-patient use for primary antiphospholipid syndrome in pregnancy*: Refer to relevant specialist for dosing recommendation.

Notes
- Porcine origin.
- Pre-filled syringe 10,000 anti-Xa IU/0.5mL is graduated.
- Store at controlled room temperature (15-25°C).

**UROKINASE**

Prep: Inj 6,000IU

Dose: ONLY for:
*Venous catheter occlusion in dialysis patients*: Refer to protocol at Nephrology ward.

**WARFARIN SODIUM**

Prep: Tab 2mg, 3mg & 5mg

Dose:
*Prophylaxis of embolisation in rheumatic heart disease and atrial fibrillation, prophylaxis after insertion of prosthetic heart valve, treatment and prophylaxis of venous thrombosis and pulmonary embolism, transient ischaemic attacks*: Usual loading dose: 5-10mg on day 1 & 2; subsequent doses determined by INR values.

Notes
- Please refer new warfarin patients for counseling.
- First dose should be less than 10mg in prolonged baseline PT, abnormal LFTs, patients in cardiac failure, on parenteral feeding, less than average body-weight, elderly or in those receiving other drugs known to potentiate oral anticoagulants.

## B02 ANTIHEMORRHAGICS

| PHYTOMENADIONE/VITAMIN K (KONAKION-G) | |
|---|---|
| Prep<br>Policy | Inj 1mg/mL (Neonatal and Paeds use) ; 10mg/mL (Adult use)<br>Can be used orally |
| Dose:<br>*Prophylaxis of Haemorrhagic Disease of the Newborn* : IM: 0.5-1mg within one hour of birth.<br>*Haemorrhagic Disease in the newborn:* SC/IM: 1mg<br>*Mild haemorrhage*: oral: 10mg. If prothrombin dose not rise sufficiently within 8-12 hrs or haemorrhage continues, increase dose. Max: single dose of 20mg or total dose of 40mg.<br>*Severe haemorrhage due to hypoprothrombinaemia*: Slow IV injection: 10-20mg. Monitor prothrombin level after 3 hrs. Repeat if necessary. | |
| Admin | If given slow IV injection, do not exceed 1mg/min. Must give very slowly to reduce risk of anaphylaxis. |
| Notes | • Inj 1mg/mL is benzyl alcohol free.<br>• When given IM, vitamin K injection dose = vitamin K oral dose.<br>• In treating haemorrhagic disease of the newborn, shortening of prothrombin time in 2-4 hrs following administration of Vitamin K1 should be seen. Failure to respond indicates another disorder |

| TRANEXAMIC ACID (TRANSAMIN) | |
|---|---|
| Prep<br>Policy | Cap 250mg, Inj 500mg/5mL<br>A*: Capsule only for O&G Specialist, Hematologists, and Oncologists. |
| Dose:<br>*Local fibrinolysis:* Slow IV Injection: 0.5-1g 2-3 times dly. Followed by Continuous IV infusion: 25-50mg/kg over 24 hrs.<br>Oral: 250mg 3 times dly – 500mg 4 times dly | |
| Admin | Slow IV Injection: Run over 5-10 minutes |
| Notes | • Alternative to Aprotinin Inj (Trasylol)<br>• Injection: *For open heart surgery or in orthopaedic surgery to reduce blood loss* |

## B03 ANTIANEMIC PREPARATIONS

- Ferrous salts show only marginal differences between one another in efficiency of absorption of iron. Choice of preparation depends on formulation, palatability, incidence of side effects and cost
- Note that total *amount* of ferrous is NOT the same as the actual content of ferrous iron *( Elemental Iron)*
-

| CYANOCOBALAMIN (VITAMIN B12) | |
|---|---|
| Prep | Inj 1mg/mL, (1mL) |
| Dose:<br>*Vitamin B12 deficiency (pernicious anemia, inadequate nutrition, intestinal* | |

| | |
|---|---|
| *malabsorption*):<br>*Starting dose to correct deficiency*: IM 1000mcg once dly for 3-7 days, then once a week for 4 wks<br>*Maintenance dose:* IM 100-1000mcg every mth or IM 1000mcg every 3 mths *Loading dose for Schilling Test* : IM 1000mcg (1mg) | |
| Admin | ±  <br>Take supplements 2 hours apart as vitamin C may destroy vitamin B12 |
| Notes | • For oral vitamin B12, suggest Methylcobal as alternative ( Kedai Farmasi) |

| **ERYTHROPOIETIN *ALFA* (EPREX-G: BINOCRIT)** | |
|---|---|
| Prep<br>Policy | Pre Filled Syringe 2,000iu/mL (1mL)<br>A*: Nephrologists only |
| Dose:<br>*Treatment of symptomatic anaemia in chronic renal failure in* **Adults***:*<br>*Haemodialysis:* a) Correction Phase: IV 50IU/kg 3 times/wk, Increase or decrease dose by 25IU/kg 3 times/wk every 4 wks.<br>b) Maintenance Phase: IV 25-100IU/kg 3 times/wk (Weekly dose of 75-300IU/kg)<br>*Peritoneal dialysis:* a) Correction phase: IV 50IU/kg 2 times/wk<br>Maintenance Phase: 25-50IU/kg 2times /wk | |
| Admin | DO NOT administer by IV Infusion<br>1.IV Injection over 1-5 minutes. In haemodialysed patients, IV bolus may be given through a venous port in dialysis line. Or, Injection can be given at end of dialysis via fistula needle tubing, flush with 10mL of isotonic saline. Give slower injection for patients with 'flu-like'symptoms<br>2. SC injection: Maximum volume of injection : 1mL. If larger volume, use more than one site of injection. (thigh and anterior abdominal wall) |
| Notes | • BINOCRIT is a biosimilar of Eprex<br>• Hb target **Adult**: 10-12g/dL (6.2-7.5mmol/L); **Child**: 9.5-11g/dL (5.9-6.8mmol/L) |

| **ERYTHROPOIETIN *BETA* (RECORMON)** | |
|---|---|
| Prep<br>Policy | **Pre Filled Syringe 2,000iu/0.3mL**<br>A*: Nephrologists only. *For dialysis patients only with : 1) Hb <8g/dL;*<br>*2) exhibiting anaemic symptoms although Hb>8g/dL ; 3) pre-transplant cases*<br>*4) Prevention of anaemia in premature infants of low birth weight.* |
| Dose:<br>*Treatment of anaemia in Chronic renal failure: a) Correction Phase* : i) SC 3x 20 IU/kg per wk. May be increased every 4 wks by 3x20 IU/kg per wk. Wkly dose can be divided into daily doses ii) IV 3x 40IU/kg per wk. May be raised to 80IU/kg – 3 times per wk. May increase again by increments of 20IU/kg 3 times per wk by monthly intervals.<br>Max dose for SC and IV : 720IU/kg/wk<br>b) Maintenance phase : dosage is reduced to half of previously administered amount. Dose is adjusted at intervals of 1-2 wks<br>*Prevention of anaemia of prematurity*: 3 x 250 IU/kg per wk, started early by day 3 of life. Duration : 6 wks | |
| Notes | • Fridge item (2-8°C). For purpose of ambulatory use, may store at room temperature ( < 25°C) for one single period for up to 3 days |

| **FERRIC AMMONIUM CITRATE, FAC mixture (EX)** | |
|---|---|
| Prep | Syrup 80mg/mL (60mL) [Elemental Iron 17.2mg/mL] |
| Dose:<br>*Treatment of iron-deficiency anaemia:* PO **Elemental** Iron : 3-6mg/kg daily given in 2-3 divided dose<br>*Prophylaxis in **babies** of low birth weight who are solely breast-fed*: **Elemental** iron 5mg daily. Start supplementation 4-6 wks after birth. | |
| Admin |  or better absorption. But can be taken after food to reduce GI side effects |
| Notes | Haemoglobin concentration should rise by 100-200mg/100mL (1-2g/litre) per day or 2g/100mL (20g/litre) over 3-4 wks. Continue treatment for further 3 mths after Hb is in normal range to replenish the iron stores. |

| **FERROUS FUMARATE** | |
|---|---|
| Prep | Tab 200mg |
| Dose:<br>*Prophylactic,* **Adult** : 200mg daily. *Therapeutic,* **Adult** : 200mg 3-4 times/day. Adjust gradually as tolerated. | |
| Admin |  or better absorption. But can be taken after food to reduce GI side effects |
| Notes | • Antacids containing carbonate or magnesium trisilicate, coffee, eggs, food, milk, tea, whole-grain breads and cereal: Concurrent use will decrease iron absorption. Best avoid iron supplement within 1 hr before or 2 hrs after ingestion of any of the above. |

| **FOLIC ACID** | |
|---|---|
| Prep | Tab 5mg, Syrup 1mg/mL (EX) |
| Dose:<br>*Folate-deficient megaloblastic anaemia* : PO **Adult and Child > 1 year**, 5mg daily for 4 mths (until term in pregnant women); up to 15mg daily in malabsorption states; **Child < 1 year,** 0.5mg/kg daily (max 5mg) for up to 4 mths; up to 10mg in malabsorption states.<br>*Prophylaxis in chronic haemolytic states:* PO **Adult** 5mg every 1-7 days<br>*Prophylaxis of folate deficiency in dialysis:* PO **Adult** 5 mg every 1-7 days; **Child** 1-12 yrs 0.25mg/kg (max 10mg) once daily, **Child** 12-18 yrs 5-10mg once daily<br>*Prevention of methotrexate-induced side effects:* PO 5mg once daily, not on methotrexate day. | |
| Admin | ±  |
| Notes | • Should not be used in undiagnosed megaloblastic anaemia unless B12 is administered concurrently otherwise neuropathy may be precipitated.<br>• For prophylaxis in chronic haemolytic state, malabsorption, renal dialysis, Folic acid is given daily or weekly, depending on diet and rate of haemolysis. |

| **IRON DEXTRAN (COSMOFER)** | |
|---|---|
| Prep | Inj 100mg/2mL |
| Dose:<br>*Treatment of Iron-deficiency in Haemodialysis and CAPD Patient;When oral iron preparations cannot be used eg due to intolerance, lack of efficacy or where there is clinical need to deliver iron rapidly to iron stores*: IV: 100-200mg, 2-3 times per week. Rapid delivery of iron, (Total dose infusion): 200mg iron/kg | |
| Admin | IV drip infusion: Cosmofer in a dose of 100-200mg iron (2-4mL) diluted in 100 mL (0.9% NS/ D5%). The first 25mg of iron should be infused over 15 minutes. If can tolerate, the remaining portion of the infusion to be infused at rate of : not more than 100ml in 30 minutes.<br>IV inj: 100-200mg iron (2-4mL) by slow IV inj (0.2mL/min) diluted in 10-20mL 0.9% NS/D5%. Test dose of 25mg iron should be injected slowly over 1 to 2 minutes. If no adverse reactions occur within 15 minutes, give the remaining portion.<br>Total dose infusion: Dilute in 500mL of 0.9% NS/D5%. The total amount of Cosmofer, up to 20mg/kg bodyweight, is infused intravenously over 4-6 hours. Test dose: 25mg of iron infused over 15 minutes. If tolerable, give remaining portion of infusion. Increase rate of infusion progressively to 45-60 drops per minute. |
| Notes | Test dose: 25mg (0.5mL) over 15 min<br>Observe patient carefully during infusion and for at least 1 hour after infusion. |

| **IRON SUCROSE (VENOFER)** | |
|---|---|
| Prep | Inj 20mg/mL (100mg/5mL) |

Dose:

1)*For iron deficiency anemia:*

Total iron deficit (mg) = body weight (kg) x ( target Hb-actual Hb) [g/L]# x 0.24 + depot iron . Max tolerated dose: 7mg/kg (over 3.5 hrs) per dose per week . (Max 500mg)

*<35 kg: Depot iron = 15mg/kg ( Target Hb 13g/L)# ; > 35kg : Depot iron = 500mg (Target Hb 15g/L)#.* Alternatively see Table:

| | **Increase in Hb required (g/dL) = Target Hb minus Actual Hb** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Body wt ( kg)** | 1g/dL | 2g/dL | 3g/dL | 4g/dL | 5g/dL | 6g/dL | 7g/dL | |
| 40kg | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Number of ampoules per week/ per treatment course (see Admin) |
| 45kg | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 50kg | 6 | 7 | 9 | 10 | 11 | 12 | 13 | |
| 55kg | 6 | 8 | 9 | 10 | 12 | 13 | 14 | |
| 60kg | 6 | 8 | 9 | 11 | 12 | 14 | 15 | |
| 65kg | 7 | 8 | 10 | 11 | 13 | 14 | 16 | |
| 70kg | 7 | 8 | 10 | 12 | 13 | 15 | 17 | |
| 75kg | 7 | 9 | 10 | 12 | 14 | 16 | 18 | |
| 80kg | 7 | 9 | 11 | 13 | 15 | 17 | 18 | |
| 85kg | 7 | 9 | 11 | 13 | 15 | 17 | 19 | |
| 90kg | 7 | 9 | 11 | 14 | 16 | 18 | 20 | |

****Before administration of therapeutic dose to new patients, test dose must be given.**

IV drip infusion: (Prepare therapeutic dose first, then administer a little as test dose)
For **adults and children >14kg:** 20mg iron over 15 min. For **children < 14kg**: 1.5mg iron/kg over 15 min. If no ADR, remaining portion of infusion can be administered at recommended speed.
IV injection: Dose as above. Inject test dose undiluted over 1-2 min. If no ADR after 15 min, administer remaining portion of injection at recommended speed ( see Admin)

*2) For iron replacement secondary to blood loss and to support autologous blood donation*
*If quantity of blood lost is known*: IV 200mg iron (=10mL Venofer) results in Hb increase equivalent to 1 unit blood (=400mL with 15g/dL Hb content)
Iron to be replaced ( mg) = number of blood units lost x 200 OR
Amount of Venofer needed (mL) = number of blood units lost x 10
*If Hb level is reduced: (if depot iron does not need to be restored)*
Iron to be replaced ( mg) = body weight (kg) x 0.24 x (target Hb-actual Hb)(g/L)#
Normal dose for **adults and elderly**:
5-10mL Venofer (100-200mg iron) 1-3 x/wk depending on Hb. In **children,** do not exceed 0.15mL Venofer (3 mg iron)/kg, 1-3 times per wk

Admin

- Intravenous drip infusion (recommended final concentration (1mg/mL)

| Dose(mg) | Diluent amount (mL) | Duration of inf |
|---|---|---|
| 100mg (5mL) | 100 mL | 15 min |
| 200mg (10mL) | 200 mL | 30 min |
| 300mg | 300 mL | 1.5 hrs |
| 400mg | 400 mL | 2.5 hrs |
| 500mg | 500 mL | 3.5 hrs |

**Maximum** single tolerated dose 7mg/kg once a week ( max 500mg), given over 3.5 hrs.

- Undiluted Intravenous slow injection :

100mg iron (5mL Venofer)in at least 5 min
200mg iron ( 10mL Venofer) in at least 10 minutes
100-200mg can be given undiluted for maximum of 3 times/week

Notes

- Hb level in OMS (PPUKM) is in *g/dL*. **#**To convert Hb (g/dL) to Hb ( g/L), multiply the former by 10.

**METHOXY POLYETHYLENE GLYCOL (MIRCERA)**

| | |
|---|---|
| Prep | Pre-filled Syringe, 120/0.3mL & 200mcg/0.3mL |
| Policy | A*: Nephrologists only. For 20 patients per year |

Dose: 1) *Symptomatic anaemia associated with chronic kidney disease in patients on dialysis and not currently treated with erythropoietins* – SC/IV **Adult** Initially 0.6 mcg/kg once every 2 weeks, adjust according to response at 4 week interval; maintenance dose: double the previous fortnightly dose may be given every 4 weeks.
2) *Symptomatic anaemia associated with chronic kidney disease in patients not on dialysis and not currently treated with erythropoietins.* To increase the haemoglobin greater than 11 g/dL (6.83mmol/L) - 'SC' **Adult**: initially 1.2 mcg/kg administered once every month *alternatively* 'SC' or 'IV' : Initially 0.6 mcg/kg once every 2 week; dose adjusted according to response at intervals of at least 4 weeks; patients treated once every 2 weeks may be given a maintenance dose of double the previous fortnightly dose every 4 weeks

3) *Symptomatic anaemia associated with chronic kidney disease in patients currently treated with Erythropoietin Stimulating Agent* - SC/IV : Starting dose based on previously given weekly dose of epoetin (Table 1). The first Mircera injection should be administered at the next scheduled dose of the previously administered epoetin.

***Table 1 - Conversion from Epoetin***

| *Previous Weekly Epoetin Dose (Units/week)* | *MIRCERA Dose* | |
|---|---|---|
| | *Once Monthly (mcg/month)* | *Once Every Two Weeks (mcg/month)* |
| *<8000* | *120* | *60* |
| *8000-16000* | *200* | *100* |
| *>16000* | *360* | *180* |

| | |
|---|---|
| Notes | • PFS: Product may be removed from fridge for storage not above 30°C for single period of 1 mth. |

## B05 BLOOD SUBSTITUTES AND PERFUSION SOLUTIONS

| **AMINO ACID, GLUCOSE & FAT EMULSION 1540ML (KABIVEN CENTRAL)** | |
|---|---|
| Prep | 1540ML 3 chamber bag and overpouch |
| Dose:<br>*Parenteral Nutrition:* IV Infusion Central Line : **Adult & Child**: The dose should be individualized with regards to the patients clinical condition, body weight and nutritional requirements. Recommended infusion period: 12-24hrs. | |
| Notes | • Reconstituted bag is for single use<br>• Total energy content: 1400 kCal [Glucose 19% (790mL); Vamin 18 (450mL); Intralipid 20% (300mL)] |

| **AMINO ACID, GLUCOSE & FAT EMULSION 1440ML (KABIVEN PERIPHERAL)** | |
|---|---|
| Prep | 1440ML 3 chamber bag and overpouch |
| Dose:<br>*Parenteral Nutrition:* IV Infusion Peripheral Line : **Adult & Child**: The dose should be individualized with regards to the patients clinical condition, body weight and nutritional requirements. | |
| Notes | • Reconstituted bag is for single use<br>• Total energy content: 1000 kCal [Glucose 11% (885mL); Vamin 18 (300mL); Intralipid 20% (255mL)] |

| **AMINO ACID, GLU & FAT EMULSION PLUS SOYA BEAN OIL, MCT, OLIVE OIL & FISH OIL 1500ML (SMOF KABIVEN CENTRAL)** | |
|---|---|
| Prep | 1477ML 3 chamber bag and overpouch |
| Dose:<br>*Parenteral Nutrition:* IV Infusion Central Line: **Adult & Child**: The dose should be individualized with regards to the patients clinical condition, body weight and nutritional requirements. | |
| Notes | • Reconstituted bag is for single use. Chemical and physical in-use stability: |

| | |
|---|---|
| | 36 hrs at 25°C. |

| **N(2)-L-ALANYL-GLUTAMINE CONCENTRATED SOLUTION 100ML (DIPEPTIVEN)** | |
|---|---|
| Prep<br>Policy | 20 g N(2)-L-Alanyl-Glutamine (100mL) glass bottle<br>In patients in catabolic and/or hypermetabolic states.<br>- critically ill patients with sepsis.<br>- surgical patients with severe infection<br>- Transplant patients (BMT) |
| Dose:<br>*Parenteral Nutrition:* <u>For central venous infusion</u>: as part of Parenteral Nutrition regimen: **Adult:** 1.5 - 2.5 mL of Dipeptiven/kg (equivalent to 0.3 - 0.5 g N(2)-L-alanyl-L-glutamine per kg body weight) (= 100-175mL Dipeptivan for 70kg patient) | |
| Notes | • Duration of treatment should not be more than 7 days.<br>• It can be added into the compatible amino acid carrier solution standard bags or compounded bags.<br>• Not for direct administration. |

| **AMINO ACID W/O ELECTROLYTE (VAMINOLACT)** | |
|---|---|
| Prep | 100mL & 500mL |
| Dose:<br>*Parenteral Nutrition:* <u>IV Infusion</u>: **Adult & Child**: Depending on patient's protein requirements. | |
| Admin | Duration of infusion : minimum 8 hrs. May be infused into the same central of peripheral vein as glucose and fat emulsion via Y-connector |
| Notes | • Amino Acids: 65.3g/L |

| **AMINO ACID, GLU & FAT EMULSION 625ML BAG (NUTRIFLEX LIPID SPECIAL)** | |
|---|---|
| Prep | 625mL |
| Dose:<br>*Parenteral Nutrition:* <u>IV Infusion (Central Venous Infusion)</u>: **Adult & Child**: The dose is adjusted according to the individual need. | |

| **AMINOPLASMA 10% WITH ELECTROLYTE 500ML INJ(AMINOPLASMAL)** | |
|---|---|
| Prep | Inj Aminoplasma 10% With Electrolyte (500mL) |
| Dose:<br>*Parenteral Nutrition:* <u>IV Infusion (Central Venous Infusion)</u>: **Adult & Child**: The dose is adjusted according to the individual need. | |
| Notes | • The solution should not be given to neonates, infants and children up to the complete 2nd year. |

| **BALANCED SALT SOLUTION** | |
|---|---|
| Prep | 500mL |
| *Irrigation Solution:* <u>Irrigation only:</u> **Adult & Child**: For irrigation during various surgical procedures at the **eyes.** | |
| Notes | • Discard any unused portions. Not for Injection/IV Infusion |
| **BICARBONATE HAEMODIALYSIS CONC ( BICARB COMPONENT) (SOLUTION B) (RENACARB K2 / RENAHD 1B)** | |

| Prep | 10 L |
|---|---|
| Dose:<br>*Acute renal failure, chronic renal failure, overhydration, treatment of poisoning, to correct electrolyte imbalances:* Not to be administered internally: **Adult**: Unless otherwise directed Mix 1.83 part with 1 part of RENACID (acid concentrate) and dilute with 34 parts of water of suitable quality. | |
| Notes | • Each 1L: sodium chloride 30.5g, sodium bicarbonate 66g. |

| **BICARBONATE HAEMODIALYSIS CONC (ACIDIC COMPONENT) (SOLUTION 2A) (RENACID K6 - CA 1.5MMOL)** | |
|---|---|
| Prep | 10 L |
| Dose:<br>*Acute renal failure, chronic renal failure, overhydration, treatment of poisoning, to correct electrolyte imbalances:* Not administered internally: **Adult**: Recommended 5L of concentrate per dialysis or as directed. Mix 1 part with 1.83 parts of Renacarb K2 (bicarbonate concentrate) and dilute with 34 parts of water of suitable quality. | |
| Notes | • Each 1L: sodium chloride 150.66g, potassium chloride 5.22g, calcium chloride 8.12g, magnesium chloride 5.24g, glacial acetic acid 8.85g. |

| **BICARBONATE HAEMODIALYSIS CONC (ACIDIC COMPONENT) (SOLUTION 3A) (RENACID K5 - CA 1.25MMOL)** | |
|---|---|
| Prep | 10 L |
| Dose:<br>*Acute renal failure, chronic renal failure, overhydration, treatment of poisoning, to correct electrolyte imbalances:* Not administered internally: **Adult**: Recommended 5L of concentrate per dialysis or as directed. Mix 1 part with 1.83 parts of Renacarb K2 (bicarbonate concentrate) and dilute with 34 parts of water of suitable quality. | |
| Notes | • Each 1L: sodium chloride 161.43g, potassium chloride 5.22g, calcium chloride 6.77g, magnesium chloride 5.24g, glacial acetic acid 8.85g. |

| **BICARBONATE HAEMODIALYSIS CONC (ACIDIC COMPONENT)( SOLUTION A FOR B POWDER) (RENACID K2S)** | |
|---|---|
| Prep | 10 L |
| Dose:<br>*Acute renal failure, chronic renal failure, overhydration, treatment of poisoning, to correct electrolyte imbalances:* Not administered internally: **Adult**: Recommended 5L of concentrate per dialysis or as directed. Mix 1 part of RENACID K2S with 34 parts of water of suitable quality. | |
| Notes | • Each 1L: sodium chloride 210.67g, potassium chloride 5.22g, calcium chloride 6.43g, magnesium chloride 3.56g, glacial acetic acid 6.30g. |

| **CALCIUM CHLORIDE 1G/10ML INJ** | |
|---|---|
| Prep<br>Policy | 1g/10mL (10%)<br>Unregistered Product |
| Dose:<br>*Acute, symptomatic ionized hypocalcaemia, hyperkalemia, magnesium toxicity:* IV: | |

| | |
|---|---|
| **Adult**: 500mg-1000mg may repeat as necessary or at intervals of 1-3 days<br>*Hypocalcemia tetany:* IV 1000mg over 10-30min, may repeat after 6 hrs | |
| Admin | Avoid rapid injection. Max. injection rate: 0.5-1mL/min |
| Notes | • [13.6mEq Calcium & 13.6mEq Chloride/10mL]<br>• 1 gram of calcium chloride (10%) = 270mg of elemental calcium.<br>• For IV use only. IM/SC may cause severe necrosis & sloughing.<br>• IV infusion: 0-1g into 50mL (>1g into 100mL) NS/D5 over 1hr |

| **CARDIOPLEGIA 20ML CONC.** | |
|---|---|
| Prep<br>Policy | Magnesium chloride, Potassium chloride, Procaine hydrochloride (20 mL)<br>A* Cardiothoracic surgeons only. |
| Dose:<br>*Indicated for use in combination with ischaemia and hypothermia to induce cardiac arrest during open-heart surgery and to preserve myocardium during asystole.* | |
| Notes | • 20 mL contains: Magnesium Chloride Hexahydrate 3.25g (16mmol), Potassium Chloride 1.19g (16mmol),Procaine Hydrochloride 272.8mg (1mmol)<br>• Not to be administered by IV injection. |

| **DEXTROSE (GLUCOSE) INTRAVENOUS INFUSION** | |
|---|---|
| Prep | Infusion 5%(100Ml & 500mL), 10% & 20% (500mL), 50% (10Ml & 500 mL) |
| Dose:<br>*5% & 10%: Energy supply, Hypertonic dehydration, vehicle for supplementary medications,*<br>*20% & 50%:Parenteral nutrition, Hypoglycemia, High-caloric carbohydrate therapy:*<br>IV infusion, according to patient's requirements:<br>**Adults:**<br>D5 IV up to 40mL/kg of body weight/day<br>D10 IV up to 30mL/kg of body weight/day<br>D20% IV up to 30mL/kg of body weight/day<br>D50% IV up to 14mL/kg of body weight/day (Slow IV infusion via central vein) | |

| **FAT EMULSION 20% (LCT) (INTRALIPID)** | |
|---|---|
| Prep | 500mL |
| Dose:<br>*PN*: IV infusion: **Adults:** Max dosage 3g/kg/day, Max. rate: 500mL/5hr. **Infants:** 0.5-4g/kg over 24hrs, Max rate: 0.17g/kg/hour (4g in 24 hr) | |
| Admin | Infusion rate should not exceed 500mL in 5 hrs |
| Notes | • Energy content: 2000kcal/1000mL |

| **FAT EMULSIONS 20% CONTAINING FISH OIL, OLIVE OIL, SOYBEAN OIL & MCT, 100ML (SMOF LIPID)** | |
|---|---|
| Prep | 100mL |
| Dose:<br>*PN. Supply of energy, essential fatty acids and omega-3 fatty acids*: IV infusion:<br>**Adults:** 1.0 – 2.0g fat/kg/day. Infusion rate: 0.125g fat/kg b.w/hour<br>**Infants:** Initially 0.5 – 1.0 g fat/kg b.w./day. Max 3 g fat/kg/day, Max rate: 0.125g | |

| |
|---|
| fat/kg/hour.<br>**Children:** Max 3 g/kg b.w./day, Max rate: 0.15g fat/kg/hour |

| **GLYCINE 1.5% IRRIGATION SOLUTION 3L** | |
|---|---|
| Prep | Irrigation solution 3L |
| Dose:<br>*For irrigation during endoscopic, and arthroscopy examination of body cavities*, *postoperative irrigation:* Irrigation: The volume depends on the extent and duration of the intervention. | |

| **HEMOFILTRATION SOLUTION (DUOSOL WITHOUT POTASSIUM)** | |
|---|---|
| Prep | Haemofiltration solution 5L |
| Dose:<br>*Haemofiltration:* IV Infusion for extracorporal circulation: **Adult:** A filtration rate of 600 – 1200mL/hr. Max rate75 L/day. | |

| **HEMOFILTRATION SOLUTION K+ (DUOSOL + 2mmol/L POTASSIUM)** | |
|---|---|
| Prep | Haemofiltration solution 5L |
| Dose:<br>*Haemofiltration*: IV Infusion for extracorporal circulation, **Adults:** A filtration rate of 600 – 1200mL/hr. Max rate75 L/day. | |

| **HUMAN ALBUMIN** | |
|---|---|
| Prep<br>Policy | Inj 5% (250mL), 25% (50mL)<br>25% - **JKTU** |
| Dose:<br>*Hypovolemic shock, severe hypoalbuminemia, adjunct in hemodialysis & bypass procedures,* IV infusion **Adult:** 5%: Initial infusion 500mL. Additional amount may be given as clinically indicated. In hypovolemic shock-can be given as rapidly as necessary. Repeat in 15-30min if needed. In pt with slightly low or normal blood volume, infusion rate = 1-2mL/min.<br>25%: Adult-initial infusion 100mL. In hypovolemic shock-can be given as rapidly as necessary. Repeat in 15-30min if needed. In pt with slightly low or normal blood volume, infusion rate = 1mL/min. | |
| Notes | • 25% solution may be needed in conditions where colloid requirement is high and there is less need for fluid. |

| **HYDROXYETHYL STARCH 130/0.4/9:1 6% IV INFUSION (VOLUVEN)** | |
|---|---|
| Prep<br>Policy | Inj 6% 500mL<br>TO BE USED ONLY IN Emergency Department AND Operation Theatres.<br>NOT TO BE USED IN ICU |
| Dose:<br>*Hypovolaemia, acute nomovolaemic haemodilution technique :*IV Infusion, **Adult:** Initially 10-20ml infused slowly. Max daily dose : 50mL/kg b.w./day | |
| Notes | • Do NOT use in critically ill, sepsis or burn patients |
| **HYDROXYETHYL STARCH 130/0.42 6% IV INFUSION (VENOFUNDIN)** | |
| Prep | Inj 6% 500mL |

| Policy | TO BE USED ONLY IN ED AND OT. NOT TO BE USED IN ICU |
|---|---|
| Dose:<br>*Hypovolaemia & shock:* IV Infusion: **Adult:** Initially 10-20ml infused slowly. Max daily dose: 50mL/kg b.w./day. Max. infusion rate depends on clinical situation. In acute shock: max. rate 20mL/kg/hr. Life threatening, 500mL may be given by manual pressure infusion | |
| Notes | • Do NOT use in critically ill patients, sepsis or burn patients |

| **ISOTONIC, BALANCED, PLASMA-ADAPTED, FULL ELECTROLYTE SOLUTION INJ (STEREOFUNDIN)** | |
|---|---|
| Prep<br>Policy | 500mL<br>Anaestesiologists only. To be kept in Department of Emergency Medicine, ICU and Operation theatres. |
| Dose:<br>*Replacement of extracellular fluid loses in isotonic dehydration:* IV Infusion: **Adult & Child:** The dosage depends on the age, weight, clinical & biological conditions of the patients. | |
| Notes | 1) Intravenous fluid therapy in patients presenting with Dengue Fever particularly in those with significant liver impairment.<br>2) Resuscitation fluid for trauma patients: head injury and hypovolemic shock. 3) Perioperative surgery e.g liver surgery or any surgery involving patients with severe liver impairment. |

| **LIPIDEM 20% EMULSION FOR INFUSION** | |
|---|---|
| Prep | 250mL (Does not contain fish oil) |
| Dose:<br>*Parenteral Nutrition:*IV Infusion: **Adult:** 1-2 g fat/kg/day. Infusion rate should be lowest possible rate. Max. infusion rate 0.15 g fat/kg/hour. | |

| **MANNITOL 10%** | |
|---|---|
| Prep | Intravenous Infusion (500mL) |
| Dose:<br>*Prophylaxis of acute renal failure, Postoperative oliguria, In forced diuresis for elimination of toxic substances via the kidney, for decreasing intracranial pressure in case of cerebral oedema:* IV Infusion: **Adult:** 500-1000mL/day = 50-100g Mannitol<br>30-60drops/min ~90-180mL/hr | |
| Notes | • Total dose of 100g mannitol in 24hrs should only be exceeded if at least 100mL/h of urine output. |

| **MANNITOL 20%** | |
|---|---|
| Prep | Intravenous Infusion (500mL) |
| Dose:<br>*Prophylaxis of acute renal failure, Postoperative oliguria, In forced diuresis for elimination of toxic substances via the kidney, for decreasing intracranial pressure in case of cerebral oedema:* IV Infusion: **Adult:** 250-500mL/day = 45-90g<br>30-60 drops/min ~90-180mL/hr | |
| Notes | • Total dose of 100g mannitol in 24hrs should only be exceeded if at least |

| | |
|---|---|
| | 100mL/h of urine output. |

| **MODIFIED GELATINE SOLUTION (GELOFUSINE)** | |
|---|---|
| Prep | Inj 4% ( 500mL) |
| Dose:<br>*Hypovolaemia, prophylaxis of hypotension, haemodilution, extra-corporeal circulation,:* IV Infusion: **Adult:** Infuse slowly the first 20-30mL, average dosage 500-2000mL depending on indication and individual requirements. | |
| Notes | • Monitor for allergic reactions |

| **P.D.S. WITH DEXTROSE SOLN.** | |
|---|---|
| Prep | 1.5% (2L & 5L), 4.25%(2L) |
| Dose:<br>*Peritoneal Dialysis:* Intraperitoneal Dialysis fluid: **Adult:** Administer 1-2L into abdominal cavity. Retain for 10-15min then drain out. Usually 60-80L is required per treatment. | |

| **POTASSIUM CHLORIDE** | |
|---|---|
| Prep | Inj Potassium Chloride 10% (10mL) |
| Dose:<br>*Hypokalaemia:* IV Infusion: **Adult:** Dose rate infusion to be determined by individual requirements. Initial 40 – 60mEq; **Child:** up to 3mEq of potassium/kg /day<br>Potassium < 2mmol/L: IV 20-40mmol/hr with continuous cardiac monitoring, max. 400mmol/day;<br>Potassium >2.5mmol/L: IV 10-15mmol/hr, max. 200mmol/day<br>Potassium 3-3.5mmol/L: PO 40-100mmol/day in 2-3 divided doses (max. 20mmol/dose)<br>Hypokalemia prophylaxis: PO 20mmol/day<br>Individualised dosage based on potassium level. Normal daily requirement: 40-80mEq; **Child:** 2-3mEq/kg/day or 40mEq/$m^2$. | |
| Admin | IV: Dilute with NS, max concentration 40mEq/L, max. rate: 20mEq/hr<br>Higher concentration (e.g. 60-80mEq/L) at higher rates of infusion may be needed in severe hypokalaemia with cardiac arrhythmias, DKA, diuretic phase of acute renal failure. **Adult** Max rate up to 40mEq/hr with continuous cardiac monitoring |
| Notes | • Potassium: 1mEq/L(US) = 1mmol/L(SI)<br>• Potassium content in 1g KCL: 13.41mmol, 600mg tab: 8mmol<br>• Dilute before use. Not for IV Bolus |

| **POTASSIUM DIHYDROGEN PHOSPHATE** | |
|---|---|
| Prep | Inj Potassium Dihydrogen Phosphate 10mmol (10mL) |
| Dose:<br>*Hypophosphataemia:* Slow IV Infusion: **Adult:** Severe hypophosphataemia: up to 10mmol phosphate, repeat if required q12hrs until serum phosphate >0.3mmol/L; **Child:** 0.15-0.33mmol/kg over 6hrs, repeat if required q6hrs until serum phosphate >0.6mmol/L. | |
| Admin | Dilute with NS/D5 |
| Notes | • Infusion Rate: Usually no greater than 0.2mmol phosphate/kg/hour. |

| | |
|---|---|
| | Children, max. dose 10mmol, max. infusion rate 0.2mmol/kg/hr. |

| **CAPD GLUCOSE CONCENTRATE (STAY SAFE)** | |
|---|---|
| Prep | **17** 1.5% (5L), **19** 2.3% (5L) |
| Policy | Used by patient with CAPD machine from Wad medical 3 |
| Dose:<br>*Peritoneal Dialysis Solution:* Intraperitoneal Dialysis fluid: **Adult:** CAPD. Administer 2000-3000mL q6hrs into abdominal cavity. Bag exchange is controlled automatically by the machine. After 2-10 hrs retention time the solution is drained off. **Child:** 30-40ml/kg | |

| **SODIUM ACETATE CONCENTRATE** | |
|---|---|
| Prep | Inj Sodium Acetate Concentrate 2meq/mL (20mL) |
| Policy | Unregistered Product |
| Dose:<br>*Hyponatremia, Intravenous additive:* IV Infusion: **Adult:** Must be diluted in large volume of fluid. Dose and rate of administration dependant on individual needs of the patient. | |

| **SODIUM BICARBONATE** | |
|---|---|
| Prep | Inj Sodium Bicarbonate 8.4%, (10mL & 50mL) |
| Dose:<br>*Metabolic acidosis, renal calculi:* IV Infusion: **Adult:** Systemic alkaliser in cardiac arrest. Initially 1mEq/kg, 0.5mEq/kg may be repeated every 10min of continued arrest. In less urgent forms of metabolic acidosis or urinary alkalizer: 2-5mEq/kg/ give over 4-8hrs<br>**Neonate & child < 2yo:** Max. dose 8mEq/kg/day. Recommended to use 4.2% administration or dilute the 8.4% solution to 0.5mEq/mL for slow administration.<br>**Undiluted sodium bicarbonate 8.4% can be use as IV injection during cardiac arrest. Otherwise dilute to 1.5% NS or D5** | |
| Notes | • Sodium bicarbonate 8.4% = 1mEq/mL (1mmol/mL, each 1 mL contain 1mmol sodium ion & 1 mmoL bicarbonate ion) |

| **SODIUM CHLORIDE 0.18%/DEXTROSE 4.23% or 10%** | |
|---|---|
| Prep | Sodium Chloride **0.18%** + Dextrose 4.23% Or 10% (500ml) |
| Dose:<br>*10%: Hypertonic dehydration, caloric supply and vehicle solution for supplementary medication; 4.23%:electrolyte maintenance in paeds, caloric supply and vehicle solution for supplementary medication:* IV Infusion: **Adult:** According to individual requirements. | |
| Notes | • [Na = 1.8g/L = 31mmol/L] |

| **SODIUM CHLORIDE 0.45%/DEXTROSE 5% or 10%** | |
|---|---|
| Prep | Sodium Chloride **0.45%** + Dextrose 5% or 10% **(**500mL) |

| |
|---|
| Dose:<br>*Dehydration, light sodium & chlorine depletion, hypochloremic alkalosis, vehicle solution for supplementary medication:* IV Infusion: **Adults:** According to individual requirements. |
| Notes • [Na = 4.5g/L = 77mmol/L] |

| **SODIUM CHLORIDE 0.45%/0.9%/3%/20%** | |
|---|---|
| Prep | 0.45%: (500mL) ; 0.9%: (10mL, 100mL, 250mL, 500mL, 3L); 3%: (500mL) ; 20%: (500mL) |
| Dose:<br>*0.45% & 0.9%: light sodium & chlorine depletion, hypochloraemic alkalosis, short term intravascular volume substitution, hypotonic & isotonic dehydration, vehicle solution for supplementary medication, diluents, wound irrigation; 0.45%: Hypertonic Dehydration;3%:Low salt syndrome, hypochloraemic alkalosis ; 20%:Hyponatraemia, hypochloraemia & hypotonic hyperhydration:* IV Infusion: **Adult:** According to individual requirements. 0.9%: Max. daily dose: 40mL/kg b.w. = 6mmol sodium/kg b.w. Infusion rate: Max: 5ml/kg b.w./hr = 1.7 drops/kg b.w./min<br>3%: Drop rate : 40 drops/min corresponding to 120mL/hr<br>20%: **Adults:** 3-6mmol/kg/b.w. **Child:** 3-5mmol/kg/b.w. Max infusion rate depends in the prevailing clinical situation.<br>Symptomatic hyponatremia (meq): Sodium deficit = (0.6(M) or 0.5(F) x BW)x (140-measured serum sodium conc.). Symptomatic: Correct at rate of 1-2meq/L/hr; Chronic: correction rate <0.5meq/L/hr. Administer 50% of sodium deficit over 24 hrs and the remainder over next 24-72hrs. Short term target 120-130meq/L. Max recommended increase in [Na+] for correction: 8-12meq/L per 24hrs. | |
| Notes | • [0.45%: Na= 4.5g/L= 77mmol/L; 0.9%: Na= 9g/L= 154mmol/L; 3%: Na=30g/L= 513mmol/L; 20%: Na=3.4mmol/mL, chloride= 3.4mmol/mL; Powder: 394mg/g= 17mmol/g] |

| **SODIUM CHLORIDE 0.9% DEXTROSE 5% INJ.** | |
|---|---|
| Prep | **Inj Sodium Chloride 0.9% Dextrose 5% (**500mL) |
| Dose:<br>*Dehydration, sodium & chlorine depletion, caloric supply, vehicle solution for supplementary medication:* IV Infusion: **Adult:** According to individual requirements.<br>Approx: 1000 mL/day. Drop rate 120 – 180 drops/ min = 360 - 540 mL/h | |
| Notes | • Hypertonic IV solution. 154mmol sodium & 50g glucose/L |

| **SODIUM CHLORIDE 0.9% IRRIGATION** | |
|---|---|
| Prep | Sodium Chloride 0.9% Irrigation (500mL, 1L, 3L) |
| Dose:<br>Irrigation Solution *: For irrigation of wound and body cavities, during operative procedures* | |
| Notes | • NOT for INJECTION |

| **SODIUM DIHYDROGEN ORTHO PHOSPHATE** | |
|---|---|
| Prep | OPD packing: 9.7g/packet |

| | |
|---|---|
| Dose:<br>*Hypophosphatemia:* PO: 10-20mmol/day, adjust accordingly. | |
| Admin | Dissolve 9.7g (1 packet) into 50mL of freshly boiled & cooled water. Each 10mL contain 16mmol phosphate. Intake of 10mL once daily is sufficient. |
| Notes | • Each g of monobasic sodium phosphate (anhydrous) contains about 8.3mmol of sodium and of phosphate. |

| **SODIUM LACTATE COMP. INJ.(HARTMANN)** | |
|---|---|
| Prep | Inj Sodium Lactate Comp **(**500mL) |
| Dose:<br>*Isotonic dehydration, salt depletion, light metabolic acidosis, electrolyte substitution:* IV Infusion: Average dose: 2L/day. Drop rate: 120-180 drops/min corresponding to 360-540mL/h | |
| Notes | • Not for use in treatment of lactic acidosis<br>• Solution contains ion (mmol/L): Sodium=131, Potassium=5, Calcium =2, Chloride =111, Lactate =29 |

| **CAPD 17 (STAY SAFE)** | |
|---|---|
| Prep<br><br>Policy | Solution for Peritoneal dialysis (2L & 2.5L). Contains **glucose (1.5%),** sodium chloride, sodium lactate, calcium chloride, magnesium chloride<br>Ward Medical 3 CAPD patients. |
| Dose:<br>*Peritoneal Dialysis Solution,* Intraperitoneal dialysis fluid, **Adult:** 2-3L solution four times daily depending on b.w. and kidney function. **Child <18:** 30-40ml/kg b.w. | |
| Notes | • Bags are exchanged over 24 hours. After 2-10 hours retention time the solution is drained out.<br>• If tension in the abdominal area occurs the volume must be reduced. |

| **CAPD 19 (STAY SAFE)** | |
|---|---|
| Prep<br><br>Policy | Solution for Peritoneal dialysis (2L & 2.5L). Contains **glucose (2.3%),** sodium chloride, sodium lactate, calcium chloride, magnesium chloride<br>Ward Medical 3 CAPD patients. |
| Dose:<br>*Peritoneal Dialysis Solution,* Intraperitoneal dialysis fluid, **Adult:** 2-3L solution four times daily depending on b.w. and kidney function. **Child <18:** 30-40mL/kg b.w. | |
| Notes | • Bags are exchanged over 24 hours. After 2-10 hours retention time the solution is drained out.<br>• If tension in the abdominal area occurs the volume must be reduced. |

| **TRACE ELEMENTS & ELECTROLYTES (PEDITRACE)** | |
|---|---|
| Prep | Trace Elements & Electrolytes (Paediatric) **(**10mL) |
| Dose:<br>*Parenteral Nutrition,* IV Infusion, **Infants & Child:** Dose 1mL/kg daily, max 15mL. Children > 15 kg: 15mL Peditrace. | |
| Admin | Can be added to amino acid or glucose solution and given during minimum infusion of 8 hrs. |

| | |
|---|---|
| Notes | • 1 mL contains Zn 3.82 µmol, Mn 18.2nmol, Cu 0.315 µmol, F 3µmol, Io 7.88nmol, Se 25.3 nmol |

| **TRACE ELEMENTS & ELECTROLYTES (ADULT) (ADDAMEL N)** | |
|---|---|
| Prep | Trace Elements & Electrolytes (Adult) **(**10mL) |
| Dose:<br>*Parenteral Nutrition,* IV Infusion, **Adult:** Dose: 10 mL daily. | |
| Notes | • Must not be given undiluted<br>• 1 mL contains: Zn 10µmol, Mn 0.5µmol, Cu 2µmol, Fe 2µmol, Cr 0.02µmol, Mo 0.02µmol, $SeO_3$ 0.04µmol, Fl 5µmol, iodine 0.1µmol, Xylitol 300mg |

# CLASS C. CARDIOVASCULAR SYSTEM

## C01 CARDIAC THERAPY

| **ADENOSINE (ADENOCOR)** | |
|---|---|
| Prep | Inj 6mg/2mL |
| Dose:<br>*Paroxymal SVT including those associated with accessory by-pass tracts (e.g. Wolff-Parkinson-White syndrome)*: Rapid IV bolus (over 2 secs) into central or large peripheral vein with cardiac monitoring: Initially 3mg (6mg may be required in some patients except those with heart transplant), 2nd dose of 6mg can be given if SVT not eliminated after 1-2mins, 3rd dose of 12mg after a further 1-2 mins if needed. | |

| **ADRENALINE ACID TARTRATE/EPINEPHRINE** | |
|---|---|
| Prep | Inj 1mg/1mL |
| Dose:<br>*Cardiac arrest*: IV bolus: 1mg preferably through a central line, repeated as necessary every 3-5 mins. | |
| Admin | IV bolus: Dilute 1mg Adrenaline Acid Tartrate with NS up to 10mL before administration. If given through peripheral line, flush with at least 20mL NS to aid entry into central circulation. |
| Notes | • Store below 25°C & protect from light.<br>• For other indications, refer to chapter ***R01 Nasal Preparations*** & ***V04 Various***. |

| **ALPROSTADIL (PROSTIN VR)** | |
|---|---|
| Prep<br>Policy | Inj 500mcg/mL<br>A*: Specified indications only |
| Dose:<br>*Maintain patency of ductus arteriosus:* IV infusion (via large vein/ umbilical artery catheter at ductal opening): **Neonate** Initially 5 nanograms/kg/min, adjusted according to response in steps of 5 nanograms/kg/min; max 100 nanograms/kg/min. | |
| Admin | Dilute 150mcg/kg bodyweight to a final volume of 50mL NS/D5%. Infusion rate of 0.1mL/hr = 5 nanograms/kg/min. Discard the solution after 24hrs.<br>Undiluted solution must not come into contact with the barrel of the plastic syringe; add the required volume of Alprostadil to a volume of infusion fluid in the syringe and then make up to final volume. |
| Notes | • Fridge item (2-8°C).<br>• Respiratory status should be monitored throughout treatment, as apnea is experienced about 10-12% of neonates with congenital heart defects with alprostadil.<br>• ***Preprinted order sheet*** is available in NICU.<br>• For other indications, refer to chapter ***G04 Urologicals***. |

| **AMIODARONE (CORDARONE/ -G)** |
|---|
| Prep: Tab 200mg, Inj 150mg/3mL |
| Dose:<br>*Treatment of arrhythmias*: Oral: 200mg every 8hrs for 1wk, then 200mg every 12hrs for |

| | |
|---|---|
| 1wk, then maintenance 100-200mg daily; IV infusion (via central line): Loading dose: 5mg/kg over 20-120mins (usually 300mg over 1hr) with ECG monitoring then 10-20mg/kg (usually 600-900mg over 23hrs), up to max 1.2g/24hrs.<br>*VF/ pulseless VT in cardiac arrest refractory to defibrillation*: Rapid IV bolus (via central line/ largest peripheral vein with highest flow possible): 300mg stat, additional 150mg can be given if necessary, followed by IV infusion (via central line): 900mg over 24hrs. | |
| Admin | IV bolus: Dilute 300mg with D5%, up to 20mL.<br>IV infusion: Dilute in 250-500mL of D5%. Should not be diluted to less than 600mcg/mL. Incompatible with NS. |
| Notes | • Store below 25°C & protect from light.<br>• Amiodarone can cause disorders of thyroid (Hypothyroidism or Hyperthyroidism may occur) and liver functions: Perform thyroid and liver function tests before starting treatment and 6 monthly thereafter.<br>• Amiodarone can also cause phototoxicity: Advice patient to shield the skin from sunlight and use sunscreen. |

| **DIGOXIN (LANOXIN)** | |
|---|---|
| Prep | Tab 0.0625mg & 0.25mg, Syrup 0.25mg/5mL (60mL), Inj 0.5mg/2mL |
| Dose:<br>*Rapid digitalization for atrial fibrillation/flutter, Loading*: PO: 0.75-1.5mg in divided doses over 24hrs (at 6hrs intervals) with approximately half of total dose in the first dose; IV infusion: 0.75-1mg (in NS/D5%) over at least 2hrs; *Maintenance*: POI: 0.125 - 0.25mg daily. | |
| Admin | IV Infusion: dilute the amount required up to 50-500mL with NS/D5%; the use of less than a 4-fold volume of diluents could lead to precipitation.<br>Oral (syrup): use only the supplied graduated pipette for measurement |
| Notes | • Reduce dose if patient has received cardiac glycosides in the preceding 2wks before initiating IV loading dose.<br>• Therapeutic Drug Monitoring (TDM) services may be required.<br>• Store below 25°C. Protect the injection ampoule from light. |

| **DOBUTAMINE HYDROCHLORIDE (DOBUTREX - G)** | |
|---|---|
| Prep<br>Policy | Inj 250mg/20mL<br>A*: Specified indications only |
| Dose:<br>*Non-hypovolemic hypotension*: Continuous IV infusion: 2.5-15mcg/kg/min adjusted according to response. Rarely, titration up to max 40mcg/kg/min may be required to achieve desired response. | |
| Admin | Dilution (single strength):<br>Amount of drug (mg) = 3 x weight (kg), then dilute the required amount (mL) with NS/D5% , up to 50mL, max conc 5mg/mL. 1mcg/kg/min = 1mL/hr. |
| Notes | • Contains sulfites. |

| **DOPAMINE HYDROCHLORIDE (INTROPIN - G)** | |
|---|---|
| Prep | Inj 200mg/5mL |
| Dose:<br>*Correction of haemodynamic imbalances present in shock due to MI, trauma, septicaemia, renal failure & chronic cardiac decompensation*: Continuous IV infusion: 2-5mcg/kg/min initially, titrate according to desired response (see notes below); max | |

| | |
|---|---|
| 50mcg/kg/min. Infusion may be increased by 1-4mcg/kg/min at 10-30mins intervals until optimal response is obtained. | |
| Admin | For general wards (for patients ≤60kg):<br>Amount of drug (mg) = 3 x weight (kg), then dilute the required amount (mL) with D5% , up to 50mL, max conc 4mg/mL.<br>For intensive care wards and patients >60kg:<br>Dilute 200mg in 50mL D5%. Use central line only. |
| Notes | The hemodynamic effects of dopamine are dose-dependent:<br>• Low-dose: 1-3mcg/kg/min, increased renal blood flow and urine output.<br>• Intermediate-dose: 3-10mcg/kg/min, increased renal blood flow, heart rate, cardiac contractility, and cardiac output.<br>• High-dose: >10mcg/kg/min, α-adrenergic effects begin to predominate, vasoconstriction, increased blood pressure.<br>• Contains sulfites. |

| **DRONEDARONE (MULTAQ)** | |
|---|---|
| Prep | Tab 400mg |
| Policy | A*: Cardiologist only |
| Dose:<br>*For clinically stable patients with a history of, or current non-permanent atrial fibrillation to prevent recurrence of AF or to lower ventricular rate*: 400mg every 12hrs. | |
| Admin |  |
| Notes | • Monitor liver function & heart failure.<br>• Perform ECG at least every 6mths, consider discontinuation if AF reoccurs.<br>• Correct hypo$K^+$ & hypo$Mg^{2+}$ before initiation and during treatment.<br>• Measure serum creatinine before treatment and 7 days after initiation, if raised, measure again after a further 7 days and consider discontinuation if creatinine continues to rise. |

| **EPHEDRINE HYDROCHLORIDE** | |
|---|---|
| Prep | Inj 30mg/1mL |
| Dose:<br>*Reversal of hypotension from spinal/epidural anaesthesia*: Slow IV: 3-6mg (max 9mg); repeated every 3-4mins to max accumulated dose of 30mg.<br>*Vasopressor*: IM/SC: 25-50mg, repeated if necessary. | |
| Admin | Slow IV: Dilute with NS to a conc. of 3mg/mL before administration. |

| **FLECAINIDE ACETATE (TAMBOCOR)** | |
|---|---|
| Prep | Tab 100mg |
| Policy | A*: Cardiologist only |
| Dose:<br>*Ventricular arrhythmias*: 100mg twice daily, up to max 400mg/day (reserved for rapid control or in heavily built patients); reduced after 3-5days to lowest dose that controls arrhythmia.<br>*Supraventricular arrhythmias*: 50mg twice daily, increased if required, max300mg daily. | |

| **GLYCERYL TRINITRATE (GTN)** | |
|---|---|
| Prep<br>Policy | Sublingual Tab 0.5mg, Inj 50mg/10mL, Transdermal Patch 5mg & 10mg (Nitroderm TTS) (A: Specialist only) |
| Dose:<br>*General*: IV infusion: Initially 5mcg/min via infusion pump. Increase by 5mcg/min every 3-5mins to 20mcg/min, then increase as needed by 10-20mcg/min every 3-5mins according to response, up to 400mcg/min.<br>*Prophylaxis and treatment of angina*: Sublingual: 0.5mg stat, repeat as required.<br>*Prophylaxis of angina:* Transdermal: Apply one patch (5mg or 10mg) to lateral chest, upper arm or shoulder; sitting on different area each time. Replace every 24hrs. Max 20mg daily. | |
| Admin | IV infusion: GTN Inj must be diluted with NS/D5%, to conc 100-400mcg/mL, max conc 400mcg/mL. |
| Notes | • Sublingual: Tablet should be discarded after 8wks in use.<br>• Transdermal: if nitrate tolerance is suspected, the patches should be taken off for several consecutive hours in each 24hrs.<br>• GTN Inj should not be admixed with other drugs.<br>• GTN Inj can be absorbed (loss of potency) by PVC apparatus. Glass or polyethylene infusion apparatus is preferable.<br>• Protect from light. |

| **IBUPROFEN (PEDEA/NEOPROFEN)** | |
|---|---|
| Prep<br>Policy | Inj 10mg/2mL & 20mg/2mL<br>A*: Neonatologist only |
| Dose:<br>*Closure of ductus arteriosus*: **Neonate** IV infusion (over 15mins): Loading dose 10mg/kg stat; maintenance (start 24hrs after LD) 5mg/kg daily for 2 days. Course may be repeated after 48hrs if necessary. | |
| Admin | Pedea Inj: Preferably given as undiluted solution.<br>Neoprofen Inj: Dilute with NS/D5% (any appropriate volume). |
| Notes | • ***Preprinted order sheet*** is available in NICU.<br>• For other indications, refer to chapter ***M01 Antiinflammatory And Antirheumatic Products***. |

| **ISOPRENALINE HYDROCHLORIDE (ISUPREL)** [Unregistered product] | |
|---|---|
| Prep<br>Policy | Inj 0.2mg/mL<br>A*: Cardiothoracic Unit only |
| Dose:<br>*Cardiac arrhythmias and cardiopulmonary resuscitations*: IV bolus: initially 0.02-0.06mg, subsequent doses range from 0.01-0.2mg, adjusted according to patient's response and monitoring of the ECG; IV infusion: initially 5mcg/min, subsequently may adjusted according to response, usual dose ranges from 2-20mcg/min; Intracardia (in emergency): 0.02mg (from undiluted solution). | |
| Admin | IV bolus: Dilute 1mL (0.2mg) with NS/D5% up to 10mL, conc. = 0.02mg/mL.<br>IV infusion: Dilute 10mL (2mg) in 500mL D5%, conc. = 4mcg/mL. |
| Notes | • Contains sulfite.<br>• Protect from light. Keep in opaque container until used.<br>• Store at controlled room temperature 20-25°C.<br>• Do not use if the injection is pinkish or darker than slightly yellow or |

| | |
|---|---|
| | contains a precipitate.<br>• It may also be administered via IM/SC route in less urgent situations. |

| **ISOSORBIDE DINITRATE (ISORDIL-G)** | |
|---|---|
| Prep | Tab 10mg |
| Dose:<br>*Angina*: 30-120mg daily, in divided doses.<br>*Left ventricular failure*: 40-160mg daily, in divided doses according response, max 240mg/day. | |

| **IVABRADINE (CORALAN)** | |
|---|---|
| Prep | Tab 5mg & 7.5mg |
| Policy | A*: Cardiologist only |
| Dose:<br>*Symptomatic treatment of chronic stable angina pectoris in patients with normal sinus rhythm, whom a) who have a contraindication/intolerance for beta-blockers or b) for those whose heart rate still uncontrolled with beta blockers*: Initially 5mg twice daily, increased if necessary after 3-4wks to 7.5mg twice daily, if not tolerated reduce dose to 2.5-5mg twice daily; **Elderly** initially 2.5mg twice daily. | |
| Admin |  To be taken during meals. |
| Notes | • Ventricular rate at rest should not be allowed to fall below 50bpm. |

| **LIDOCAINE/ LIGNOCAINE HYDROCHLORIDE** | |
|---|---|
| Prep | Inj 100mg/5mL (2%) & 500mg/5mL (10%) |
| Dose:<br>*Ventricular arrhythmias particularly post-MI*: IV injection (over 2-3mins): 100mg (50mg in lighter patient or those whose circulation is severely impaired),with ECG monitoring, may be repeated if necessary once or twice at intervals of not less than 10mins if an IV infusion is not immediately available, max 200-300mg during 1hr period; IV infusion: 1-4mg/min (20-50mcg/kg/min) following IV bolus administration with ECG monitoring. | |
| Admin | IV infusion: Dilute 50mL Inj Lidocaine 2% with NS/D5%, up to 500mL, final conc 2mg/mL. Discard after 24hrs.<br>Inj Lidocaine 10% must be diluted before use. |
| Notes | • Lidocaine infusion should be stopped as soon as cardiac rhythm is stable or at the earliest sign of toxicity. It is rarely necessary to continue infusion beyond 24hrs.<br>• For other indications, refer to chapter ***D04 Antipruritics, incl. Antihistamines, Anaesthetics Etc, N01 Anaesthetics*** & ***R02 Throat Preparations***. |

| **MAGNESIUM SULPHATE** | |
|---|---|
| Prep | Inj 2.5g/5mL (50%) |
| Dose:<br>*Torsades de pointes*: Intraosseous/ Slow IV (over 15mins): 1 - 2g. | |
| Admin | Intraosseous/Slow IV: Dilute with 10mL D5%. |
| Notes | • Each 5mL contains 10mmol (40mEq) $Mg^{2+}$ & $SO_4^{2-}$.<br>• For other indications, refer to chapter ***A12 Mineral Supplements*** & ***R03 Drugs For Obstructive Airway Diseases***. |

| **MILRINONE LACTATE (PRIMACOR)** | |
|---|---|
| Prep | Inj 10mg/10mL |
| Dose:<br>*Acute decompensated heart failure*: *Loading dose*: Slow IV: 50mcg/kg over 10mins; *Maintenance*: Continuous IV infusion: 0.59-1.13mcg/kg/day (0.375-0.75mcg/kg/min). | |
| Admin | Slow IV: Can be given as undiluted or diluted solution.<br>Continuous IV infusion: Dilute each 20mL (20 mg) with 80mL NS/D5%, final conc 200mcg/mL. |

| **NORADRENALINE ACID TARTRATE/NOREPINEPHRINE BITARTRATE (LEVOPHED - G)** | |
|---|---|
| Prep | Inj 0.2% (4mg/4mL Noradrenaline base) |
| Dose (expressed as base):<br>*Acute hypotension*: Continuous IV infusion (via central line): Initially 8-12mcg/min, adjusted according to response, usual maintenance 2-4mcg/min. | |
| Admin | For general medical settings:<br>**0.03mg** of Noradrenaline base x weight (kg), dilute in 50mL D5%. 0.01mcg/kg/min = 1mL/hr.<br>For intensive care areas (with close ECG monitoring):<br>Dilute 1 – 8 ampoules (4-32mL) into 50mL D5%. |
| Notes | • 1mg of Noradrenaline base = 2mg Noradrenaline Acid Tartrate.<br>• Contains sulfite.<br>• Do not use the solution if its colour is pinkish or darker than slightly yellow or if it contains a precipitate.<br>• Avoid extravasation of Noradrenalne into tissues as it might lead to local necrosis. The infusion site should be checked frequently for free flow. |

| **PHENYLEPHRINE HYDROCHLORIDE** | |
|---|---|
| Prep<br>Policy | Inj 10mg/mL<br>Unregistered product. |
| Dose:<br>*Acute hypotension*: Slow IV: 100-500mcg stat, repeated as necessary after at least 15mins; SC/IM: 2-5mg stat, followed if necessary by further doses of 1-10mg; IV infusion: Initially up to 180mcg/min, reduced to 30-60mcg/min according to response. | |
| Admin | Slow IV: Dilute 1mL (10mg) up to 10mL with WFI.<br>IV infusion: Dilute 10mg in 500mL NS/D5%. |
| Notes | • Phenylephrine has a longer duration of action than Noradrenaline, may cause prolonged rise in BP. |

## C02 ANTIHYPERTENSIVES

| **HYDRALAZINE HYDROCHLORIDE (APRESOL)** | |
|---|---|
| Prep<br>Policy | Inj 20mg/mL ,Tab 50mg<br>(Unregistered product & A*: Endocrinologist only) |
| Dose:<br>*Treatment of severe hypertension in pregnancy*: Slow IV: 5-10mg stat, may be repeated after 20-30mins; IV infusion: Initially 200-300mcg/min; maintenance 50-150mcg/min.<br>*Hypertension (to replace antihypertensives which affect renin & aldosterone assay during investigation of Primary Aldosteronism)*: PO: 100mg -200mg twice daily. | |

| | |
|---|---|
| Admin | Slow IV: Dilute with 10mL NS.<br>IV infusion: Dilute with 500mL NS. |
| Notes | • IV Hydralazine may cause a rapid fall in BP even with low doses. |

| **METHYLDOPA (ALDOMET - G)** | |
|---|---|
| Prep | Tab 250mg |
| Dose:<br>*Hypertension*: Initially 250mg 2-3 times daily, increased gradually at intervals of at least 2 days, max 3g daily; **Elderly** Initially 125mg twice daily, increased gradually, max. 2g daily. | |
| Notes | • Side-effects are minimized if daily dose is kept <1g.<br>• Caution. Drowsiness may affect performance of skilled tasks (e.g. driving); effects of alcohol may be enhanced. |

| **MINOXIDIL (LONITEN – G)** | |
|---|---|
| Prep<br>Policy | Tab 5mg<br>A: Specialist and *Pusat Perubatan Primer* only |
| Dose:<br>*Severe hypertension (in addition to beta-blocker and diuretic)*: Initially 5mg (**Elderly** 2.5mg) in 1-2 divided doses, increased by 5-10mg every 3 or more days, max 100mg daily (seldom necessary to exceed 50mg daily). | |
| Notes | • Vasodilatation produced by Minoxidil is accompanied by increased cardiac output and tachycardia and development of fluid retention. Therefore, the addition of beta-blocker and a diuretic (usually frusemide) are mandatory.<br>• Unsuitable for women due to hypertrichosis side-effect. |

| **MOXONIDINE (PHYSIOTENS)** | |
|---|---|
| Prep<br>Policy | Tab 0.2mg & 0.4mg<br>A*: Nephrologist, Cardiologist, Endocrinologist and Neurologist only |
| Dose:<br>*Mild to moderate essential hypertension*: 200mcg once daily in the morning, increased if necessary after 3wks to 400mcg daily in 1-2 divided doses; max 600mcg daily in 2 divided doses (max single dose = 400mcg). | |
| Admin | ±  |

| **PRAZOSIN (MINIPRESS/ – G)** | |
|---|---|
| Prep | Tab 1mg, 2mg & 5mg |
| Dose:<br>*Hypertension*: Initially 0.5mg 2-3 times daily with initial dose at bedtime to avoid collapse due to hypotension, increased to 1mg 2-3 times daily after 3-7days, further increased if necessary to max 20mg daily in divided doses. | |
| Notes | • Caution. May affect performance of skilled tasks (e.g. driving). |

| **SODIUM NITROPRUSSIDE** | |
|---|---|
| Prep<br>Policy | Inj 50mg/2mL<br>Unregistered product. |
| Dose: | |

| | |
|---|---|
| *Hypertensive crisis & Controlled hypotension in surgery*: IV infusion: Initially 0.3mcg/kg/min, increased in steps of 0.5mcg/kg/min every 5mins until desired BP reduction is obtained. Max rate: 10mcg/kg/min but the maximum rate should never last more than 10mins. Terminate immediately if response still unsatisfactory after 10mins of the max rate. | |
| Admin | Reconstitute 50mg with solvent provided then dilute immediately with 500mL D5%. |
| Notes | • Reconstituted and diluted solution should be used within 4hrs and should be protected from light with foil provided.<br>• Monitor for cyanide toxicity symptoms i.e. tachycardia, sweating, hyperventilation, arrhythmias, marked metabolic acidosis: if occur, discontinue and manage toxicity.<br>• This is an unregistered product. |

## C03 DIURETICS

- Both Frusemide and Bumetanide act within 1hr of oral administration and diuresis is complete within 6hrs.
- 1mg of bumetanide is approximately equivalent to 40mg of frusemide.
- Thiazides are fast in onset (1-2hrs) and have prolonged duration of action (12-24hrs).
- Use potassium-sparing diuretics cautiously in patients on ACE inhibitors, may cause severe hyperkalaemia. Do not give concurrently with potassium supplements.

| **AMILORIDE & HYDROCHLOROTHIAZIDE (MODURETIC-G)** | |
|---|---|
| Prep | Tab Amiloride 5mg/Hydrochlorothiazide 50mg |
| Dose:<br>*Hypertension*: Initially ½ tab daily, increase if necessary to 1 tab daily or in divided doses.<br>*Congestive heart failure*: Initially ½ tab daily, increase if necessary, max 2 tab/day.<br>*Oedema and ascites in cirrhosis of the liver*: 1 tab daily, increase if necessary to max 2 tabs daily. | |

| **BUMETANIDE (BURINEX)** | |
|---|---|
| Prep | Inj 2mg/4mL, Tab 1mg |
| Dose:<br>*Oedema:* PO: 1mg in the morning, repeated after 6-8hrs if necessary; 5mg daily in resistant oedema, max 10mg daily; **Elderly** 0.5mg daily maybe sufficient; IV (over 1-2mins): 1-2mg, 2nd and 3rd dose 2-3hrs later, max 10mg daily; **Elderly** 0.5mg daily maybe sufficient; IM: 0.5-1mg initially then adjust according to response, max 10mg daily; Intermittent IV infusion: 2-5mg over 30-60mins; Continuous IV infusion: 10mg/day over minimum of 12hrs. | |
| Admin | IV infusion: suggested volume 500mL of NS/D5%; conc >25mcg/mL may cause precipitation. |
| Notes | • Continuous IV infusion is more effective and induces fewer adverse effects than bolus doses in patients with chronic renal insufficiency. |

| **FRUSEMIDE (LASIX-G)** |
|---|
| Prep: Tab 40mg, Syrup 10mg/mL (60mL), Inj 20mg/2mL |
| Dose: |

| | |
|---|---|
| PO: *Oedema:* **Adult** Initially 40mg in the morning, maintenance: 20-40mg daily; **Child** 1mth-12yo**:** 0.5-2mg/kg 2-3 times daily (every 24hrs if postmenstrual age under 31wks), max 12mg/kg daily, not to exceed 80mg daily. *Resistant oedema*: 80-120mg daily, max 600mg/day. *Resistant hypertension*: 40-80mg daily.<br>IM/ Slow IV: **Adult** Initially 20-40mg, increase if necessary by 20mg/dose not less than every 2 hours until the desired effect is obtained, determined individual dose may be given once or twice daily; **Child** 1mth-12yo: Slow IV(over 5-10mins): 0.5-1mg/kg, repeated every 8hrs as necessary, max 2mg/kg (max 40mg) every 8hrs. | |
| Admin | IV infusion: Single doses of more than 40mg should be given as IV infusion. Dilute total dose in 50mL NS, infuse at rate ≤ 4mg/min to avoid ototoxicity.<br>Slow IV: **Child** To be infused at rate 100mcg/kg/min (not exceeding 500mcg/kg/min), max 4mg/min. |
| Notes | • Syrup 10mg/mL is an unregistered product.<br>• *Preprinted order sheet* is available in NICU. |

| **HYDROCHLOROTHIAZIDE** | |
|---|---|
| Prep | Tab 25mg & 50mg, Syrup (EX) 5mg/mL & 25mg/mL |
| Dose:<br>**Adult** *Oedema(Adjunct)*: 25-200mg daily in 1-2 divided doses. *Hypertension*: Initially 12.5-25mg daily, may be increased to 25-50mg twice daily, max 100mg twice daily.<br>**Child** *Oedema(Adjunct)& Hypertension*: 1-2 mg/kg/day in single or two divided doses; **Infants** <6mth: doses up to 3mg/kg/day in two divided doses; max dose for **Infants** up to 2yo: 37.5mg daily, **Child** 2-12yo: 100mg daily. | |

| **INDAPAMIDE (NATRILIX SR-G)** | |
|---|---|
| Prep | SR Tab 1.5mg |
| Policy | A: For Physicians and *Pusat Perubatan Primer* only |
| Dose:<br>*Hypertension*: 1 tablet daily, preferably in the morning. | |
| Admin | Swallow whole, do not chew or crush |

| **SPIRONOLACTONE (ALDACTONE-G)** | |
|---|---|
| Prep | Tab 25mg, Syrup (EX) 4mg/mL & 25mg/mL |
| Dose:<br>*Oedema associated with CHF, cirrhosis of the liver or nephrotic syndrome*: **Adult** 100-200mg daily, increase if necessary to 400mg daily; **Child** 1mth-12yo: 1-3mg/kg daily in 1-2 divided doses, up to 9mg/kg daily.<br>*Moderate to severe heart failure already on ACE inhibitor and a diuretic*: **Adult** 25mg daily, max 50mg daily.<br>*Primary hyperaldosteronism*: 100-400mg daily. | |
| Admin | |

## C04 PERIPHERAL VASODILATORS

| **PENTOXIFYLLINE (TRENTAL - G)** | |
|---|---|
| Prep | SR Tab 400mg |
| Dose: | |

| | |
|---|---|
| *Peripheral vascular disease*: 400mg 2-3 times daily. | |
| Admin |  Swallow whole, do not chew or crush. |

| **PHENOXYBENZAMINE (DIBENYLINE)** | |
|---|---|
| Prep | Inj 100mg/2mL |
| Dose:<br>*Phaeochromocytoma*: IV infusion (via large vein): 1mg/kg/day over at least 2hrs into large vein; do not repeat within 24hrs (intensive care facilities required). | |
| Admin | IV infusion: Dilute in 200–500mL NS; max 4hrs between dilution and completion of administration. |
| Notes | • Owing to risk of contact sensitization, healthcare professional should avoid contamination of hands.<br>• This is an unregistered product.<br>• Oral formulation is available at *Kedai Farmasi, PPUKM* for Prof. Dr. Nor Azmi Kamaruddin's named patient only. |

## C05 VASOPROTECTIVES

| **BENZYL BENZOATE/BALSAM PERU/ZINC OXIDE (ANUSOL-G)** | |
|---|---|
| Prep | Suppository Benzyl benzoate 33mg/Balsam Peru 50mg/Zinc oxide 300mg |
| Dose:<br>*Uncomplicated haemorrhoids:* Per Rectal: Insert 1 supp into rectum at morning and night, and after bowel movement | |
| Admin | Rectal use only |
| Notes | • Do not use for longer than 7 days. Not recommended in children |

| **DIOSMIN/HESPERIDIN (DAFLON)** | |
|---|---|
| Prep<br>Policy | Tab 450mg/50mg<br>(A*: Only for O&G Specialists, Surgeons, Gastroenterologists and Pusat Perubatan Primer) |
| Dose:<br>*Chronic haemorrhoidal disease:* PO: 2 tabs once daily<br>*Acute haemorrhoidal:* PO: 2 tabs 3 times/day for 4 days, then 2 tabs 2 times/day for 3 days and 2 tabs once daily thereafter<br>*Chronic venous insufficiency:* PO: 2 tabs once daily | |
| Admin |  |

| **LIGNOCAINE/HYDROCORTISONE** | |
|---|---|
| Prep | Suppository Hydrocortisone acetate 7.5mg/Benzocaine 40mg/Zinc oxide 250mg |
| Dose:<br>*Haemorrhoids:* Per Rectal: Insert 1 supp into rectum at morning and evening after bowel movement | |
| Admin | Rectal use only |
| Notes | • Not for long term use(contains steroid & local anaesthetic) |

## C07 BETA BLOCKING AGENTS

- Avoid in patients with a history of asthma or bronchospasm. A cardioselective beta-blocker may be used with extreme caution under specialist supervision if there is no other alternative. Cardioselective beta-blockers have a lesser effect on airways but are not free of this side-effect.
- Beta-blockers can lead to a small deterioration of glucose tolerance and interfere with metabolic and autonomic responses to hypoglycaemia. Cardioselective beta blockers may be preferable but avoid altogether in those with frequent episodes of hypoglycaemia.
- Concomitant use of beta-blocker with diltiazem may increase risk of bradycardia and AV block.
- Risk of hypotension & asystole when used with verapamil injection

| **ATENOLOL (TENORMIN-G)** | |
|---|---|
| Prep | Tab 50mg & 100mg |
| Dose:<br>*Hypertension & arrhythmias:* PO: 50-100 mg once daily<br>*Angina:* PO: 100 mg once daily or divided doses | |
| Admin | ±  |

| **BISOPROLOL FUMARATE (CONCOR)** | |
|---|---|
| Prep | Tab 2.5mg, 5mg & 10mg (A*: Cardiologist only) |
| Dose:<br>*Only for Congestive heart failure:* PO: Starting dose 1.25 mg once daily for 1 week, if well tolerated, increase to 2.5 mg once daily for 1 week, then to 3.75 mg once daily for another week, and then increase to 5 mg once daily for 4 weeks. Then increase to 7.5 mg once daily for 4 weeks, then to maximum of 10 mg once daily for maintenance | |
| Admin | ±  To be taken in the morning<br>Do not chew tablet. |

| **CARVEDILOL ( DILATREND-G)** | |
|---|---|
| Prep | Tab 6.25mg & 25mg (A*: Cardiologist only), Syrup 1.67mg/mL (EX) |
| Dose:<br>*Congestive heart failure:* PO: Initiation of therapy 3.125 mg 2 times/day for 2 weeks; if tolerated can increase dose at intervals not less than 2 weeks, to 6.25 mg, 12.5 mg & 25 mg 2 times/day. Maximum recommended dose for severe heart failure in patient <85kg is 25mg 2 times/day or if >85kg is 50mg 2 times/day. | |
| Admin |  |

| **ESMOLOL HCL (BREVIBLOC-G)** | |
|---|---|
| Prep | Inj 100mg/10mL |
| Dose:<br>*Supraventricular Tachycardia (SVT):* IV: Usual dose: 50-200 mcg/kg/min. Average effective dose : 100mcg/kg/min. Some pts require low dose 25mcg/kg/min. Initially loading infusiom 500 mcg/kg/min over 1 min, then maintenance infusion 50 mcg/kg/min over 4 min. If adequate response in 5 min, maintain infusion & adjust accordingly to BP & HR at 5-10 min intervals. If inadequate response, same loading | |

| |
|---|
| infusion 500mcg/kg/min over 1 min, then maintenance infusion 100mcg/kg/min over 4 min. Continue this titration procedure (repeat same loading infusion) & increase maintenance infusion by 50mcg/kg/min increments. As desired BP/HR obtained, omit subsequent loading doses & adjust maintenance doses accordingly at 5-10 min intervals. |

| | |
|---|---|
| Admin | Ready-to-use preparation: can be administered undiluted (to discard unused portion after opening ) |

| **LABETOLOL** | |
|---|---|
| Prep | Tab 100mg & Inj 25mg/5mL |
| Dose:<br>*Severe Hypertension:* PO: Initiate with 100 mg (50 mg in elderly) 2 times/day; increase dosage of 100 mg 2 times/day should be made at intervals (2 to 14 days) to a maximum of 2400 mg/day (in 3 or 4 divided doses). *Severe Hypertension (urgent BP reduction):* IV Bolus: 50 mg over 1min; repeat at 5min intervals if necessary until a satisfactory response occurs. Maximum total dose: 200 mg.<br>*Severe hypertension of pregnancy:* IV Infusion: Start at 20 mg/hr then double up every 30 mins until satisfactory response is obtained or a dosage of 160 mg/hr is reached. Occasionally higher dosage may be necessary.<br>*Hypertensive episodes following Acute Myocardiac Infarction:* IV Infusion: Start with 15 mg/hr and gradually increase to maximum of 120 mg/hr depending on the control of blood pressure. | |
| Admin | Tablets:  <br>IV Infusion: dilute 200 mg (8 vials of 25mg/5mL) up to 200mL with D5% or NS.<br>Final concentration = 1mg/mL; therefore 20mg/hr = 20mL/hr |
| Notes | • Severe hepatocellular damage reported after both short-term and long-term treatment. If laboratory testing showed evidence of damage (or if jaundice), labetalol should be stopped and not restarted. |

| **METOPROLOL TARTRATE (BETALOC-G)** | |
|---|---|
| Prep | Tab 100mg |
| Dose:<br>*Hypertension:* PO: Initially 50 mg 2 times/day; increase if necessary to 200 mg daily in 1-2 divided dose. Maximum dose is 400 mg daily in divided doses. *Angina:* PO: 50-100 mg 2-3 times/day. *Arrhythmias:* PO: 50 mg 2-3 times/day; up to 300 mg daily in divided doses. *Post-MI (secondary prevention):* PO: 25-100 mg 2 times/day. *Hypothyroidism (adjucnt):* PO: 50 mg 4 times/day; dose should be reduced as the euthyroid state is achieved. | |
| Admin | ±  |

| **PROPRANOLOL HCL (INDERAL-G)** | |
|---|---|
| Prep | Tab 10mg & 40mg, Syrup 1mg/mL (EX), Inj 1mg/mL |
| Dose:<br>*Hypertension:* PO: 80 mg 2 times/day, increase at weekly interval to maintenance of 160-320mg/day. Maximum 640 mg/day. *Angina:* PO: Initially 40 mg 2-3 times/day; maintenance dose 120-240 mg daily in divided doses. *Phaeochromocytoma (only with α-blocker):* PO: 60 mg once daily for 3 days before surgery or 30 mg once daily for non- | |

| | |
|---|---|
| operable patients. *Arrhythmias, hypertropic obstructive cardiomyopathy, anxiety tachycardia, thyrotoxicosis (adjunct):* PO: 10-40 mg 3-4 times/day. *Arrhythmias and thyrotoxic crisis:* IV injection: 1 mg over 1min, repeat at 2min intervals if necessary to maximum of 10 mg (5 mg if patient is under anaesthesia). *Prophylaxis of variceal bleeding in portal hypertension*: PO: Initially 40mg 2times/day. Anxiety with symptoms eg palpitation, sweating, tremor: PO: 40mg once daily, increased to 40mg 3times/day if necessary. | |
| Admin | ±  |

## C08 CALCIUM CHANNEL BLOCKER

| **AMLODIPINE BESILATE (NORVASC-G)** | |
|---|---|
| Prep | Tab 5mg & 10mg |
| Dose: *Hypertension or Angina:* PO: 5-10 mg once daily | |
| Admin | ±  |

| **DILTIAZEM HCL (HERBESSER - G, HERBESSER-R, MONO-TILDIEM SR)** | |
|---|---|
| Prep | Tab 30mg SR Cap 100mg (Herbesser R100), 200mg (Mono- Tildiem SR & Herbesser R200) & 300mg (Mono-Tildiem SR) |
| Policy | (A*: Cardiologists and Nephrologists only) |
| Dose: *Angina & hypertension:* PO: 30-60mg 3 times/day (initially 2 times/day for elderly patient); Max dose 360mg/day. SR Cap: 100-300 mg once daily | |
| Admin | ±  For SR capsule: to swallow whole, do not crush or chew. |
| Notes | • In combination with Simvastatin maximum dose of Diltiazem is 40mg/day |

| **FELODIPINE (PLENDIL)** | |
|---|---|
| Prep | Tab 2.5mg, 5mg & 10mg |
| Policy | (A/PPP: Physicians and Pusat Perubatan Primer) |
| Dose: *Hypertension*: PO: Initially 5 mg (elderly 2.5mg) once daily. Maintenance dose 5-10 mg once daily to a maximum of 20 mg daily. *Angina*: PO: 5 mg once daily, increase if necessary to 10 mg once daily. | |
| Admin | ±  In morning. Swallow whole, do not crush or chew |
| Notes | • Antihypertensive effect: Evident 2 hrs after initial dose & lasts for 24 hrs at steady state. |

| **NIFEDIPINE (ADALAT-G, ADALAT LA)** | |
|---|---|
| Prep | Tab 10mg (Adalat original cap: Prof Datin Dr Nafisah Adeeb & Nephrologist ONLY), LA Tab 30mg (Adalat LA) (A: Physicians only), Syrup: To be freshly prepared-very sensitive to light & no formula. |
| Policy | |
| Dose: *Hypertensive emergencies:* PO: Start with 20 mg and if further reduction in BP is required, another 10mg may be given after a period of 30mins. *Hypertension & angina*: LA Tab PO: Initially start with 30-60 mg once daily. Dosage should be titrated according | |

| | |
|---|---|
| to patient's condition. Maximum dose is 90 mg/day. *Raynaud's Syndrome*: PO: Initially 5 mg 3 times/day, adjust dose according to response to maximum of 20 mg 3 times/day. LA Tab PO: 30-60 mg once daily | |
| Admin | ±  LA tab: Swallow whole |
| Notes | •Dosage adjustment should occur at 7- to 14-day intervals.<br>•Short-acting formulations of nifedipine are not recommended for angina or long-term management of hypertension (may be associated with large variation in blood pressure and reflex tachycardia). |

| **NIMODIPINE (NIMOTOP)** | |
|---|---|
| Prep | Tab 30mg (A*: Specific indication only) |
| Dose:<br>*Only for subarachnoid haemorrhage*: PO: 60 mg every 4hrs (max. 360 mg/day), start within 4 days of *aneurysmal subarachnoid* haemorrhage, continue for 21 days. | |
| Admin | ±  Swallow whole. Do not crush/chew. |

| **VERAPAMIL HCL (ISOPTIN-G)** | |
|---|---|
| Prep | Tab 40mg, Inj 5mg/2mL |
| Dose:<br>*Angina:* PO: 80-120 mg 3 times/day, *Hypertension:* PO: 80 mg 3 times/day can titrate up to 480 mg daily in 2-3 divided doses. **Elderly**: Start with 40mg 3times/day. *Supraventricular arrhythmias (SVT)*: PO: 40-120 mg 3 times/day. IV infusion: 2.5-5mg by slow IV over 2min preferably with ECG monitoring; a further 5-10 mg may be administered after 15-30mins if no response is observed. Max total dose 20 mg. | |
| Admin | Taken 30mins before  |
| Notes | • In combination with Simvastatin, max dose of Verapamil is 20 mg/day |

## C09 AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

- Angiotensin-II receptor blockers (ARB) are indicated for patients who are intolerant to ACE inhibitors

| **ALISKIREN (RASILEZ)** | |
|---|---|
| Prep<br>Policy | Tab Aliskiren 150mg & 300mg<br>(A*: Cardiologists, Nephrologists and Endocrinologists only) |
| Dose:<br>*3rd line for Hypertension:* PO: 150-300 mg once daily | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Present substantially (85-90%) within 2 weeks of initiation.<br>• Combination with ACEI/ARB is not recommended for other patients, but is contraindicated in DM patients or patients with ClCr <60 mL/min. |

| **ALISKIREN + HYDROCHLOROTHIAZIDE (RASILEZ HCT)** | |
|---|---|
| Prep<br>Policy | Tab 150mg/12.5mg, 150mg/25mg, 300mg/12.5mg & 300mg/25mg<br>(A*: Cardiologists, Nephrologists and Endocrinologists only) |

| | |
|---|---|
| Dose:<br>*Third line therapy for treatment of hypertension:* PO: 1 tab once daily; start with Aliskiren 150 mg /hydrochlorothiazide 12.5 mg, dose may be titrated at 2- to 4-week intervals. Max: Aliskiren 300 mg/Hydrochlorothiazide 25mg once daily. | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Largely seen in 1 wk, max seen within 4 wks. |

| **AMLODIPINE + VALSARTAN (EXFORGE)** | |
|---|---|
| Prep<br>Policy | Tab 5mg/80mg, 5mg/160mg & 10mg/160mg.<br>(A*: Cardiologists, Endocrinologists, Neurologists & Nephrologists only) |
| Dose:<br>*Hypertension:* PO: 1 tab once daily. Dose increased at 2 wks interval to maximum dose of Amlodipine 10 mg/Valsartan 320 mg once daily. | |
| Admin | ±  |
| Notes | • As second line therapy.<br>• Antihypertensive effect: max reached within 2 wks after a dose change. |

| **AMLODIPINE + VALSARTAN + HYDROCHLOROTHIAZIDE (EXFORGE HCT)** | |
|---|---|
| Prep<br>Policy | Tab 5mg/160mg/12.5mg, 10mg/160mg/12.5mg & 10mg/160mg/25mg<br>(A*: Cardiologists, Endocrinologists, Neurologists, Nephrologists & Pakar Perubatan Dalaman) |
| Dose:<br>*Hypertension:* PO: 1 tab once daily; dose may be titrated after 2 weeks of therapy. Max: Amlodipine 10 mg/Valsartan 320 mg/Hydrochlorothiazide 25 mg once daily. | |
| Admin | ±  |
| Notes | • As second line therapy.<br>• Antihypertensive effect: max reached within 2 wks after a dose change. |

| **CAPTOPRIL (CAPOTEN-G)** | |
|---|---|
| Prep | Tab 12.5mg & 25mg, Syrup 0.75mg/mL & 1mg/mL (EX) |
| Dose:<br>*Hypertension:* PO: Initially 12.5 mg 2 times/day (6.25 mg if used in addition to diuretic or in elderly patients). Maintenance dose 25 mg 2 times/day to max of 150 mg/day in divided doses. *Heart failure (adjunct):* PO: Initially 6.25-12.5 mg 3 times/day with close supervision. Increase gradually at 2 wks intervals if tolerated. Maintenance dose 25-50 mg 3 times/day. Max: 150 mg 3 times/day. *Diabetic nephropathy:* PO: 75-100 mg in divided dose; severe renal impairment initiate with 12.5 mg 2 times/day. | |
| Admin | 1 hour before  |
| Notes | • First dose at bedtime (rapid BP reduction esp in patients with diuretics) |

| **ENALAPRIL MALEATE (RENITEC-G)** | |
|---|---|
| Prep | Tab 5mg, 10mg & 20mg, Syrup 1mg/mL (EX) |
| Dose:<br>*Hypertension:* PO: Initially 5 mg once daily (2.5 mg once daily in elderly, patients taking diuretics and in renal impairment), usual maintenance dose 10-20 mg once daily. Maximum recommended dose 40 mg/day. *Heart failure (adjunct):* PO: Initially 2.5 mg | |

| | |
|---|---|
| once daily with close supervision. Increase gradually over 2-4 wks to 10-20mg 2times/day if tolerated. | |
| Admin | ±  |

| **IMIDAPRIL (TANATRIL)** | |
|---|---|
| Prep<br>Policy | Tab 5mg & 10mg<br>(A*: Physicians & Pusat Perubatan Primer only) |
| Dose:<br>*Essential hypertension*: PO: 5-10 mg once daily to maximum of 20 mg daily (half adult dose for elderly). Initial dose of 2.5 mg in patients taking diuretics in renal/hepatic impairment, heart failure, angina or cerebrovascular disease patient. | |
| Admin |  |

| **IRBESARTAN (APROVEL)** | |
|---|---|
| Prep<br>Policy | Tab 150mg & 300mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only).<br>To be initiated by Consultants. |
| Dose:<br>*Hypertension & renal disease in hypertensive type 2 diabetes mellitus:* PO: Initially 150 mg once daily (75 mg in elderly >75yo and haemodialysis patients); may be increased to 300 mg once daily | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Seen within 1-2 wks, max 4-6 wks after initiation. |

| **IRBESARTAN + HYDROCHLOROTHIAZIDE (CO-APROVEL)** | |
|---|---|
| Prep<br>Policy | Tab 150mg/12.5mg, 300mg/12.5mg & 300mg/25mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only).<br>To be initiated by Consultants. |
| Dose:<br>*Essential hypertension when monotherapy is insufficient:* PO: 1 tab once daily to maximum dose of Irbesartan 300 mg/Hydrochlorothiazide 25 mg once daily | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Apparent after 1st dose, present within 1-2 wks, max by 6-8wks. |

| **LOSARTAN POTASSIUM (COZAAR)** | |
|---|---|
| Prep<br>Policy | Tab 50mg & 100mg<br>(A*: Cardiologists & Nephrologists only) |
| Dose:<br>*Hypertension & diabetic nephropathy in type 2 diabetes mellitus*:PO: 50 mg once daily (elderly over 75 years, intravascular volume depletion, initially 25mg once daily), if necessary increased after several weeks to 100 mg once daily. | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Max attained 3-6 wks after initiation. |

| **LOSARTAN POTASSIUM + HYDROCHLOROTHIAZIDE (HYZAAR/FORTZAAR)** | |
|---|---|
| Prep<br>Policy | Tab 50mg/12.5mg (Hyzaar) & 100mg/25mg (Fortzaar)<br>(A*: Cardiologists & Nephrologists only) |
| Dose:<br>*Hypertension:* PO: 1 tab once daily of Losartan 50mg/Hydrochlorothiazide 12.5 mg. If inadequate response dosage may be increased to maximum of Losartan 100 mg/Hydrochlorothiazide 25 mg once daily. | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Generally attained within 3 weeks after initiation. |

| **PERINDOPRIL (COVERSYL/-G)** | |
|---|---|
| Prep | Tab 4mg & 8mg (A/PPP: Physicians & Pusat Perubatan Primer only) |
| Dose:<br>*Hypertension & post myocardial infarction/revascularisation:* PO: Initially 4 mg once daily (2 mg once daily in elderly, cardiac decompensation, volume depletion & renal impairment). Dose may be increased after 1 month to max 8 mg once daily. *Heart failure (adjunct):* PO: Initially 2 mg once daily, increased after 2 weeks to maximum of 4 mg once daily if tolerated. | |
| Admin |  In the morning |

| **PERINDOPRIL + INDAPAMIDE (COVERSYL PLUS)** | |
|---|---|
| Prep | Tab 4mg/1.25mg (A: Physicians only) |
| Dose:<br>*Essential hypertension when monotherapy is insufficient:* PO: 1 tab once daily | |
| Admin |  In the morning |

| **RAMIPRIL (TRITACE-G)** | |
|---|---|
| Prep | Tab 2.5mg, Cap 5mg & Tab 10mg (A*: Cardiologists) |
| Dose:<br>*Heart failure:* PO: Initial dose 1.25 mg once daily, increase dose at 1-2 weeks interval. Maximum dose 10 mg daily (doses >2.5 mg may be taken as 2 times/day)<br>*Post myocardial infarction:* PO: Initial dose 2.5 mg 2 times/day; if not well tolerated to start with 1.25 mg 2 times/day for 2days. Depending on response, dose may be doubled at 1-3 days intervals. Total daily dose may be taken as single dose eventually. Max 10mg daily. | |
| Admin | ±  Do not chew |
| Notes | • Limit to 6months supply |

| **TELMISARTAN (MICARDIS)** | |
|---|---|
| Prep<br>Policy | Tab 40mg & 80mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only).<br>To be initiated by Consultants. |
| Dose:<br>*Hypertension:* PO: Initial dose 40 mg once daily, maintenance dose 20 mg-80 mg od. Severe hypertension doses up to 160 mg alone or combi with hydrochlorothiazide | |

| | |
|---|---|
| Admin | ±  |
| Notes | • Antihypertensive effect: Max attained at 4-8 wks after initiation. |

| **TELMISARTAN + HYDROCHLOROTHIAZIDE (MICARDIS PLUS)** | |
|---|---|
| Prep<br>Policy | Tab 40mg/12.5mg & 80mg/12.5mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only)<br>To be initiated by Consultants. |
| Dose:<br>*Essential hypertension when monotherapy is insufficient:* PO: 1-2 tabs once daily to maximum recommended dose of Telmisartan 160 mg/Hydrochlorothiazide 25 mg once daily. | |
| Admin | ±  |
| Notes | • Antihypertensive effect: Max attained at 4-8 wks after initiation |

| **TELMISARTAN + AMLODIPINE (TWYNSTA)** | |
|---|---|
| Prep | Tab 40mg/5mg, 80mg/5mg & 80mg/10mg<br>(A*: Cardiologists, Endocrinologists, Neurologists & Nephrologists only) |
| Dose:<br>*Essential hypertension as second line therapy:* PO: 1 tab once daily titrated at 2 wks intervals to max dose of Telmisartan 80 mg/Amlodipine 10 mg once daily | |
| Admin | ±  |
| Notes | As second line therapy. |

| **VALSARTAN (DIOVAN)** | |
|---|---|
| Prep<br>Policy | Tab 80mg & 160mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only.<br>To be initiated by Consultant. |
| Dose:<br>*Hypertension:* PO: Initially 80 mg once daily (40 mg once daily in intravascular volume depletion). Increased at 4 wks intervals up to max 320mg once daily. *Heart failure:* PO: Initially 40 mg 2 times/day increased at 2 weekly intervals up to maximum of 160 mg 2 times/day if tolerated. *Post myocardial infarction:* PO: Initially 20 mg 2 times/day titrate up to 160 mg 2 times/day if well tolerated. | |
| Admin | ±  |
| Notes | Antihypertensive effect: within 2 wks & max seen after 4 wks. |

| **VALSARTAN + HYDROCHLOROTHIAZIDE (CO-DIOVAN)** | |
|---|---|
| Prep | Tab 80mg/12.5mg & 160mg/12.5mg<br>(A*/PPP: Cardiologists, Endocrinologists, Neurologists & Nephrologists only.<br>To be initiated by Consultant) |
| Dose:<br>*Hypertension:* PO: 1 tab once daily to maximum recommended dose of Valsartan 320 mg/Hydrochlorothiazide 25 mg once daily. | |
| Admin | ±  |
| Notes | Antihypertensive effect: Seen within 2 - 4 wks. |

## C10 LIPID MODIFYING AGENTS

| **CIPROFIBRATE (MODALIM)** | |
|---|---|
| Prep | Tab 100mg (A: Physicians only) |
| Dose:<br>*Hypercholesterolaemia and hypertriglyceridaemia alone or combined*: PO: 100 mg one tab once daily (Moderate Renal impairment 100 mg once every other day). Avoid in severe renal impairment. | |
| Admin | ±  |

| **FENOFIBRATE (LIPANTHYL SUPRA-G)** | |
|---|---|
| Prep | Tab 160mg (A /PPP: Physicians & Family Medicine Specialists only) |
| Dose:<br>*Hypercholesterolaemia and hypertriglyceridaemia alone or combined*: PO: 160 mg od | |
| Admin |  |
| Notes | Not to be used in severe renal impairment (CrCL:<15mL/min/1.73m$^2$ ) |

| **GEMFIBROZIL (LOPID-G)** | |
|---|---|
| Prep | Cap 300mg |
| Dose:<br>*Hypertriglyceridaemia in conjunction with dietary modification*: PO: 600 mg 2 times/day | |
| Admin | 30mins before  |
| Notes | Not to be used in severe renal impairment (<30mL/minute/1.73m$^2$)<br>Avoid concomitant use with statins: high risk of rhabdomyolysis |

| **LOVASTATIN** | |
|---|---|
| Prep | Tab 20mg & 40mg |
| Dose:<br>*Hypercholesterolaemia and hypertriglyceridaemia combined*: PO: Starting dose is 20 mg once daily. Recommended dose range is 20-80 mg/day in single or divided doses. Maximum recommended dose is 80 mg/day. | |
| Admin | Before bedtime |

# CLASS D. DERMATOLOGICALS

## D01 ANTIFUNGALS FOR DERMATOLOGICAL USE

| **CLOTRIMAZOLE CREAM (CANESTAN-G)** | |
|---|---|
| Prep | Cream 1%, 15g |
| Dose:<br>*Treatment of All Dermatomycoses due to dermatophytes (Trichophyton species), yeast (Candida species), Moulds and other fungi & skin diseases showing secondary infection with these fungi.* | |
| Admin | Applied topically 2-3 times/day for 2-4 weeks. |
| Notes | • Adverse reactions may occasionally occur; skin rash, hives, blistering, burning, itching, peeling, redness and other sign of skin irritation not present before therapy.<br>• Clinical improvement and relief of pruritus usually occur within 1 week; up to 8 weeks of therapy may be required for mycological cures, especially in treatment of *Tinea pedis.* If clinical improvement does not occur after 4 weeks of treatment, the diagnosis should be reevaluated.<br>• Precaution in pregnancy & breast feeding patients due to small amounts of topical Clotrimazole are absorbed systemically.<br>• Store below 30°C. Protect from light, heat, moisture & freezing. |

| **MICONAZOLE & HYDROCORTISONE (DAKTACORT-G)** | |
|---|---|
| Prep | Cream Miconazole 2% & Hydrocortisone 1%, 15g |
| Dose:<br>*Topical treatment of inflamed dermatoses e.g. Intertrigo, Infected eczema, Tinea pedis, Tinea cruris, Tinea corporis and Cutaneous candidiasis.* | |
| Admin | Apply a thin layer of the cream 2 times/day until lesion has completely disappeared. Once the inflammatory symptoms have disappeared (about 7 days), treatment can be continued where necessary with antifungal alone. |
| Notes | • Do not use on children under 2 years old except under doctor supervision.<br>• Should not be used in pregnant patients in large amounts or for long period of time. |

| **MICONAZOLE NITRATE (DAKTARIN-G)** | |
|---|---|
| Prep | Cream 2%, 15g |
| Dose:<br>*Skin infections*: Apply 1-2 times/day for 2-5 weeks. *Nail infections:* Apply once daily. Treatment should be continued at least 1 week after disappearance of all signs & symptoms. | |
| Admin | Apply a thin layer of the cream. |
| Notes | • Do not use on children under 2 years old except under doctor supervision.<br>• Advise to consult doctor if no improvements in 4 weeks (for Athlete`s foot) or 2 weeks (for Jock itch).<br>• Miconazole is considered safe during pregnancy, although vagina use should be avoided during 1st trimester.<br>• Prolonged use of may give rise to overgrowth of non susceptible organisms. |

| **NYSTATIN (UPHASTATIN-G)** | |
|---|---|
| Prep | Cream 100,000 units/g, 30g |
| Dose:<br>Treatment of *Cutaneous candidiasis* caused by *Candida albicans* & other *Candida* species. | |
| Admin | Apply on the affected area 2-3 times/day. |
| Notes | • Avoid contact with eyes or occlusive dressing |

| **SALICYLIC ACID IN VASELINE** | |
|---|---|
| Prep | Ointment Salicylic acid 5% & 40% in Vaseline, 50g (EX) [Martindale] |
| Dose:<br>Preparation contain between 2 and 6% salicylic acid used in treatment hyperkeratotic and scaling skin conditions such as *dandruff and seborrhoeic dermatitis, ichtyosis, psoarisis and acne*. Preparation containing up to 60% salicylic acid used as a caustic for removal of *plantar warts, corns, calluses.* | |
| Admin | Use petroleum jelly or a plaster to protect the healthy skin around the wart. Before applying the treatment, use an emery board or pumice stone to rub any excess outer skin on the affected area. Soak the wart in water for about 5 minutes to soften the skin and apply directly once daily or as directed for at least 12 weeks on the wart and allow to dry. When used in combination with other medicines, it takes off the upper layer of skin, allowing other medicines to penetrate more effectively. |
| Notes | • Preparation containing high concentrations of salicylic acid can cause skin ulceration and erosion; healthy skin surrounding warts, corns & calluses should be protected with soft paraffin or plaster.<br>• Used with care on the extremities of patients with diabetes or impaired peripheral circulation.<br>• Readily absorbed through the skin. Avoid used for prolonged periods, in high concentrations, on large areas, inflamed or broken skin.<br>• Avoid in Asthmatic patients. |

| **TERBINAFINE (LAMISIL-G)** | |
|---|---|
| Prep<br>Policy | Tab 250mg (A*: Dermatologist only. Only for treating fungal infection caused by dermatophytes). |
| Dose:<br>**Adult** 250mg once daily for *Fingernail Onychomycosis* (6 weeks), *Toenail Onychomycosis* (12 weeks), *Tinea pedis* (2-6 weeks), *Tinea corporis, Tinea cruris & Cutaneous candidiasis* (2-4 weeks) **Child** for *Tinea capitis* over 1 year old (4 weeks)**.** Body weight <20kg 62.5mg once daily, 20-40kg 125mg once daily & >40kg 250mg once daily. | |
| Admin | Oral administration. To be taken  |
| Notes | • Patients with poor nail outgrowth may require longer treatments.<br>• Not recommended for patients with chronic or active liver disease. (Hepatotoxicity)<br>• Patients with impaired renal function ($Cl_{CR}$ <50mL/min or $S_{CR}$ >300) half the normal dose.<br>• Terbinafine excreted in breast milk. |

| **WHITFIELD`S** | |
|---|---|
| Prep | Ointment 40% 50g & 450g (Content: Benzoic acid 6%, Salicylic acid 3%) |
| Dose:<br>*For treatment of fungal infections of the skins.* | |
| Admin | Apply sparingly over affected area. |
| Notes | • Do not apply to broken or inflamed skin.<br>• Prolonged use should be avoided.<br>• Discontinue therapy if excessive dryness or irritation of the skin occurs. |

## D02 EMOLLIENTS AND PROTECTIVES

| **AQUEOUS CREAM IN GLYCERIN** | |
|---|---|
| Prep | Aqueous Cream 50% in Glycerin, 50g, 100g & 500g |
| Dose:<br>*Acts as an emollient to soften or soothe skin.* | |
| Admin | Apply as directed. |

| **AQUEOUS CREAM** | |
|---|---|
| Prep | Cream 50g, 100g & 500g |
| Dose:<br>*In irritant conditions of the skin it acts as an emollient to soften or soothe skin.* | |
| Admin | A thin film of the cream should be applied over affected area 2-3 times/day. |

| **CARBAMIDE (UREA-G)** | |
|---|---|
| Prep | Cream 10%, 20g |
| Dose:<br>*For dry, scaling and itchy skin conditions. It also retains skin moisture and maintains skin in a soft and supple condition.* | |
| Admin | Apply directly onto the skin 2-3 times/day or as required. |

| **CETOMACROGOL EMULSIFYING** | |
|---|---|
| Prep | Ointment, 100g & 450g (Content: Cetomacrogol Emulsifying Wax 30%, Liquid Paraffin 20% & White Soft Paraffin 50%) |
| Dose:<br>*Poorly absorbed and is non-irritant to the skin. Used as emollient and protectant.* | |
| Admin | Apply over affected area as needed. |

| **LUBRICATING JELLY (KY JELLY-G)** | |
|---|---|
| Prep | Water soluble gel, 50g |
| Dose:<br>*Lubricant for insertion of rectal thermometers, enema, douche and similar type nozzles.* | |
| Admin | Apply as directed. |

| **SALICYLIC ACID & BETAMETHASONE DIPROPIONATE (DIPROSALIC-G)** | |
|---|---|
| Prep | Ointment Salicylic acid 3% & Betamethasone Dipropionate 0.05% |
| Dose:<br>*For the relief of inflammatory manifestations of hyperkeratotic and dry corticosteroid-* | |

| | |
|---|---|
| *responsive dermatoses which include psoarisis, chronic atopic dermatitis, neurodermatitis and seborrhoeic dermatitis.* | |
| Admin | Apply a thin film to cover completely the affected area, twice daily, in the morning and at night. |

| **WHITE SOFT PARAFFIN (VASELINE)** | |
|---|---|
| Prep | Ointment 50g, 500g & 15kg |
| Dose: *As an emollient.* | |
| Admin | Apply as directed. |

| **ZINC OXIDE** | |
|---|---|
| Prep | Cream 32%, 450g |
| Dose:<br>*As a mild astringent for the skin, a soothing and protective application in eczema and to slight excoriation.* | |
| Admin | Apply 2-3 times/day. Wash and dry area thoroughly before applying the cream. |

## D03 PREPARATIONS FOR TREATMENT OF WOUNDS & ULCERS

| **PROTEIN-FREE HAEMODIALYSATE (SOLCOSERYL)** | |
|---|---|
| Prep<br>Policy | Ointment 5%, / Jelly 10%, 20g / Dental paste 5% (Content: Haemodialysate from calves blood) |
| Dose:<br>*Jelly: Speeds up healing (leg ulcers, pressure sores in bedridden patients and burns). Ointment: Promotes the healing of dry wounds (minor burns & abrasions). It used in combination with jelly for deep poorly healing wounds to protect the newly formed skin. Dental paste:* | |
| Admin | Jelly: Applied thinly 2-3 times/day until fresh skin tissue has formed. It is advisable to cover the newly forms skin at the edge of poorly healing wounds and ulcers using Solcoseryl ointment. Before application of the product, recent, weeping abrasions should be dried with a clean piece of gauze. Ointment: Applied thinly 1-2 times/day and covered with a dressing. Do not massage in. Treatment until the wound has completely healed. |
| Notes | • Can be used during pregnancy and breastfeeding. |

## D04 ANTIPRURITICS, INCL. ANTIHISTAMINES, ANESTHETICS ETC

| **CALAMINE** | |
|---|---|
| Prep | Cream 25g (Content: Calamine BP 4% & Zinc Oxide BP 3%) |
| Dose:<br>*Soothes and relieves nappy rashes, prickly heat, minor skin irritations, insect bites and sunburn.* | |
| Admin | Apply thin layer over the affected area whenever necessary. It should not be applied to open wounds or raw surfaces of large area. |

| **CALAMINE** |
|---|

| | |
|---|---|
| Prep | Lotion 60mL (Content: Calamine powder 15%, Menthol 0.15%) |
| Dose: *For the relief of itchiness associated with prickly heat, acne, insect bites and sunburn.* | |
| Admin | Apply sparingly onto the affected area 3-4 times/day. It should not be applied to open wounds or raw surfaces of large area. |

| **CROTAMITON (EURAX-G)** | |
|---|---|
| Prep | Cream 10%, 15g |
| Dose: *For the treatment of scabies.* | |
| Admin | After a warm bath and dry skin thoroughly, apply cream in sufficient amount to entire body and rubbed in well. After 24hrs a second coat of the cream should be applied. Then 48hrs after the second application, a cleansing bath should be taken to remove the medication. |
| Notes | • All household members may be requiring concurrent therapy, since the infestation may spread to persons in close contact. |

| **LIGNOCAINE HYDROCHLORIDE** | |
|---|---|
| Prep | Jelly 2%, 20g |
| Dose: *As sterile lubricant.* | |
| Admin | To be applied to endotracheal tubes and instruments prior to insertion. |
| Notes | • Should be used with caution in patients with Congestive Heart Failure, bradycardia or respiratory depression.<br>• Lignocaine metabolised in liver and must be given with cautions to patients with hepatics insufficiency.<br>• For other indications, refer to chapter ***C01 Cardiac Therapy***, ***R02 Throat Preparations*** & ***N01 Anesthetics***. |

| **LIGNOCAINE HYDROCHLORIDE WITH CHLORHEXIDINE** | |
|---|---|
| Prep | Lignocaine 2% with Chlorhexidine 0.05% Gel |
| Dose:<br>*Local anaesthesia & lubrication during catheterisation, exploration by sound & other endourethral procedure; cystoscopy & symptomatic treatment of painful cystitis & urethritis.* **Adult Male** instil 20mL; sounding procedure / cytoscopy instil 40mL. **Adult** Female Urological procedure instil 5-10mL. **Child <12yo** up to 6mg/kg. | |
| Admin | **Adult Male** Instil 20 mL slowly into the urethra until it reaches external sphincter, proximal to the prostrate. Subsequently, apply compression at the corona for several mins. Fill the length of the urethra w/ the remaining gel. Sounding procedure or cytoscopy Instill 40 mL (in 3-4 portions) into the insertion area then allow 5-10 mins for anaesth to take effect. **Adult Female** Prior to urological procedure, instill 5-10 mL in small portions to fill the whole urethra & allow anaesth to take effect in 3-5 mins. |

| **MENTHOL 0.25% IN CALAMINE** | |
|---|---|
| Prep | Cream 50g / Lotion 60mL (EX) |
| Dose:<br>*Adds protective and softening property of calamine, the refreshing menthol. It is recommended for the relief of discomfort due to rash, sunburn, insect bites and other skin irritations.* | |
| Admin | Apply locally 3 or 4 time/day in the affected area. |

# D05 ANTI PSORIATICS

| **ACITRECIN (NEOTIGASON)** | |
|---|---|
| Prep<br>Policy | Capsule 10mg & 25mg<br>A*: Dermatologist only |
| Dose:<br>*Severe psoriasis, severe congenital ichthyosis & severe Darier's disease:* **Adult** Initially 25-30mg od (Darier's disease 10mg od) for 2-4 weeks, adjusted according to response, usual range 25-50mg od for a further 6-8 weeks (max 75mg od). Can terminate treatment if psoriatic lesions have resolved sufficiently. *Disorders of keratinization***: Adult** lowest possible dosage for maintenance therapy is given, maybe less than 20 mg/day & should not exceed 50 mg/day.<br>**Child 1mth-12yo**: 500mcg/kg od with food/milk (up to 1mg/kg/day, max. 35 mg od) with careful monitoring of musculoskeletal development (max continuous duration is 6mths). **Child 12-18yo:** 25-30 mg od (Darier's disease 10 mg od) for 2-4wks, then adjusted to response, usually 25-50 mg od (max 75 mg od) for further 6-8wks (Darier's disease & ichthyosis ≤50 mg od for up to 6mths) | |
| Admin | Taken once daily with  or with milk. |
| Notes | • Highly Teratogenic - exclude pregnancy before starting. Test for pregnancy within 2 weeks before treatment & monthly thereafter. Start treatment on day 2 or 3 of menstrual cycle. Avoid pregnancy for at least 1 mth before, during & for at least 3 yrs after treatment. Should not donate blood during or for at least 1 yr after stopping therapy. Must not be given to nursing mothers.<br>• Contraindicated in patients with severely impaired liver or kidney function and in patients with chronic abnormally elevated blood lipid values.<br>• Contraindicated Neotigason with Tetracyclines (increased intracranial pressure), with methotrexate & etretinate (increase risk hepatitis), and with Vitamin A & other retinoids (risk of hypervitaminosis A).<br>• Monitor liver function at baseline, every 1-2 wks for 2 mths then every 3 mths. Also check lipids & glucose levels. |

| **CALCIPOTRIOL & BETAMETHASONE (XAMIOL)** | |
|---|---|
| Prep<br>Policy | Gel Calcipotriol 50mcg/g (as hydrate) & Betamethasone 0.5mg/g (as dipropionate), 15 g & 30g (A*: Dermatologist only) 15 g for scalp psoriasis and 30 g for scalp and body psoriasis |
| Dose:<br>*Topical treatment of scalp psoriasis. Usually an amount* 1-4 g/day (4g correspond to 1 teaspoon). Max daily dose not exceed 15g and max weekly dose should not exceed 100g. Body surface area treated with calcipotriol containing should not exceed 30%. Recommended treatment period is 4 weeks. | |
| Admin | Shake the bottle before use. Applied to affected areas of the scalp once daily. It is recommended that the hair is not washed immediately after application and should remain on the scalp during the night or during the day. |
| Notes | • Contraindicated in patient with severe renal insufficiency, severe hepatic disorders. |

| | |
|---|---|
| | • Due to calcipotriol, Xamiol contraindicated in patients with known disorders of calcium metabolism.<br>• Due to corticosteroid, Xamiol contraindicated in viral lesions of the skin (herpes/varicella), fungal/bacterial skin infections, parasitic infections, acne vulgaris, ulcers, wounds, ichthyosis, atropic skin and skin manifestation in relation to tuberculosis or syphilis.<br>• Avoid concurrent treatment with other steroids on the scalp.<br>• Application under occlusive dressing should be avoided since it increases the systemic absorption of corticosteroid.<br>• Xamiol gel not recommended for use in children below 18 years due lacking of data.<br>• Shelf life: Unopened container (2 years). Discard 3 month after first opening. Do not refrigerate. |

| **CALCIPOTRIOL & BETAMETHASONE (DAIVOBET)** | |
|---|---|
| Prep<br>Policy | Ointment Calcipotriol 50mcg/g (as hydrate) & Betamethasone 0.05mg/g (as dipropionate), 30g (A*: Dermatologist only) |
| Dose:<br>*Initial topical treatment of stable plaque psoriasis vulgaris amenable to topical therapy.* Maximum daily dose (15g) and weekly dose (100g) and treated area not more than 30% body surface. | |
| Admin | Should be applied to the affected area once daily. Treatment period is 4 weeks. |
| Notes | • Avoid application to the scalp, face, mouth and eyes. Hand must be washed after each application. Avoid exposure to either natural or artificial sunlight.<br>• Not recommended for use in children below 18 years due lacking of data.<br>• Not to be mixed with other medical products.<br>• Shelf life: Unopened container (2 years). Discard 12 month after first opening. |

| **COAL TAR (LPC) 6% IN VASELINE** | |
|---|---|
| Prep | Ointment 50g & 500g (EX) |
| Dose:<br>*Used topically in eczema, psoriasis, dandruff, seborrhoeic dermatitis, and other skin disorders.* | |
| Admin | Apply 1-2 times/day. |
| Notes | • May cause irritation and acne-like eruptions of the skin and should not be applied to inflamed or broken skin, mucosa, or the anogenital area. |

| **COAL TAR (LPC) 6% SA 4%, BVC 20% IN 70% CALAMINE** | |
|---|---|
| Prep | Cream 50g (EX) |
| Dose:<br>*Used topically in eczema, psoriasis, dandruff, seborrhoeic dermatitis, and other skin disorders.* | |
| Admin | Apply as directed. |

| **COAL TAR (LPC) 1% IN PHENOL 0.5%, SULFUR 0.5% (EGOPSORYL TA)** | |
|---|---|
| Prep | Coal Tar 1%, Phenol 0.5%, Sulfur 0.5% in an alcohol gel base. |

| | |
|---|---|
| Dose: *An aid to control stable, moderate psoarisis and persistent dermatitis.* | |
| Admin | Apply 2-4 times/day. As condition improves reduce the number of applications gradually. Do not discontinue used suddenly. For sensitive skin / children use `Egoderm Cream' for 7 days before applying EgoPsoryl TA. When first applying use over a layer of `Egoderm Cream' for few days. For scalp apply at night, leave on during the day if required. Cleanse with `Sebitar' in the morning. |

| **COAL TAR & OLEYL ALC (POLYTAR LIQUID)** | |
|---|---|
| Prep<br>Policy | Liquid 1%, 150mL [Content: tar 0.3%, cade oil 0.3%, coal tar solution 0.1%, arachis (peanut) oil extract of crude coal tar 0.3%.] |
| Dose: *Scalp disorders including psoriasis, seborrhea, eczema, pruritus & dandruff.* | |
| Admin | Apply 2-4 times/day. Wet hair. Apply enough to produce abundant lather while massaging into scalp & adjacent areas. Rinse & repeat. As the condition improves, reduce the number of applications gradually. |

## D06 ANTIBIOTICS & CHEMOTHERAPY

| **ACICLOVIR (ZOVIRAX-G)** | |
|---|---|
| Prep<br>Policy | Cream 5%, 5g<br>A*: Specialists including Pakar Perubatan Klinik Warga |
| Dose: *For treatment of Herpes simplex virus infections of skin including initial and recurrent genital herpes and herpes labialis. Apply 5-6 times/day 4hourly intervals for 5-10 days.* | |
| Admin | Apply sufficient quantity to cover all lesions adequately. |
| Notes | • For cutaneous use only. Not recommended for application to buccal or vaginal mucous membrane that indicates reversible irritation.<br>• Use with caution during pregnancy and lactation. |

| **FUSIDIC ACID (FUCIDIN-G)** | |
|---|---|
| Prep | Cream/Ointment 2%, 5g (A*: For out-patient use only) |
| Dose: *Skin lesions primarily or secondarily infected with Staphylococcus or Streptococcus.* Maximum 10 days to avoid resistance. | |
| Admin | After washing, apply to the affected area twice daily as directed. |
| Notes | • Drug can penetrate the placental barrier and is detectable in the milk of nursing mother. |

| **GENTAMYCIN** | |
|---|---|
| Prep | Cream 0.1%, 15g |
| Dose: *Treatment of impetidgo erythema and other localised primarily bacterial skin infection with a Gram-negative component and also for secondary bacterial infections complicating other pre-existing dermatoses.* **Adult & child >1 yo:** Topical to the skin 3-4 times/day. | |
| Admin | Apply to affected area as directed. |

| | |
|---|---|
| Notes | • Consideration should be given to the possibility of foetal ototoxicity when gentamycin is applied to large denuded areas of skin especially in the elderly and in those with impaired renal function.<br>• Excessive or prolonged use may result in super infection. |

| **MUPIROCIN NASAL OINTMENT (BACTROBAN-G)** | |
|---|---|
| Prep | Nasal Ointment 2%, 3g (For in-patients only) |
| Dose:<br>*Antibiotic ointment to eliminate nasal MRSA colonies.* **Treatment:** Apply to the inside of each nostril 3-4 times/day for 10 days. Prevention: Apply to the inside of each nostril 2 times/day. | |
| Admin | Wash and dry hands. Place a small amount of Bactroban, into nose about the size of a match head on your little finger (or cotton bud) and apply to the inside nostril. Press the sides of nose together to spread the ointment around the nostril. |
| Notes | • The bacteria are normally cleared from nose within 5-7 days of starting treatment.<br>• If forget to apply, apply it as soon as you remember. If next dose is due within an hour, skip the missed dose. Do not use a double dose to make up for a forgotten dose. |

| **MUPIROCIN (BACTROBAN-G)** | |
|---|---|
| Prep<br>Policy | Ointment 2%, 15g<br>A*: For MRSA infection only |
| Dose:<br>*Treatment of bacterial skin infections, e.g. impetigo, folliculitus and furunculosis*. **Adult & child >1yo:** Apply up to 3 times/day, max 10 days to avoid resistance development. The area may be covered with dressing or occluded if desired. | |
| Admin | Applied to the affected area. |
| Notes | • NOT for ophthalmic or intranasal use.<br>• Use with caution in moderate-severe renal impairment.<br>• Avoid the eyes when used on the face. |

| **NEOMYCIN** | |
|---|---|
| Prep | Cream 0.5%, 30g |
| Dose:<br>*Used to prevent or treat skin infections caused by bacteria.* | |
| Admin | Thoroughly clean the infected area, allow it to dry, and then gently rub the medication in until most of it disappears. Apply 2-3 times daily to affected areas (short-term use). Use just enough medication to cover the affected area. |
| Notes | • Apply only small amounts of neomycin to scrapes, cuts, burns, sores, and wounds, and do not apply it more frequently than directed. Neomycin can be absorbed into the body through broken skin and cause kidney problems and hearing difficulty.<br>• Do not apply neomycin to a child's diaper area, especially if the skin is raw, unless directed to do so by a doctor |

| **SILVER SULPHADIAZINE (SSD)** |
|---|

| | |
|---|---|
| Prep | Cream 1%, 50g & 450g |
| Dose: *Prophylaxis & treatment of infection in burn wounds: Burns:* **Adult & child 1mth-18yo:** Daily or more frequently if very exudative. *Leg ulcers/pressure sores*: od/eod (not recommended if ulcers very exudative). *Finger-tip injuries:* Every 2-3 days. | |
| Admin | Apply 1-2 times daily to a thickness approximately 1/16 inch on the burn areas. It should be continued until satisfactory healing has occurred or until the burn side has ready for grafting. |
| Notes | • Use with care in renal/liver impairment & extensive burns – accumulation of sulfadiazine may occur.<br>• Use in G6PD deficiency may result in hemolytic anemia.<br>• Self-limiting leucopenia developing 2-3 days after starting SSD treatment has been reported & treatment discontinuation usually not needed provided FBC are monitored carefully & return to normality within several days. Stop treatment immediately if severe blood or skin disorders develops.<br>• Should not be used in pregnant women approaching or at term, premature infants or newborn infants during 1st two mths of life because is known to increase kernicterus. |

## D07 CORTICOSTEROIDS, DERMATOLOGICAL PREPARATIONS

| Prescribing suitable quantities of corticosteroid preparations (Sufficient for an adult once daily application for 2 weeks) | |
|---|---|
| | Creams & ointments |
| Face & neck | 15-30g |
| Both hands | 15-30g |
| Both arms | 30-60g |
| Both legs | 100g |
| Trunk | 100g |
| Scalp | 15-30g |
| Groins & genitalia | 15-30g |
| 1 fingertip unit is sufficient to cover an area twice that of a flat adult palm (1 fingertip = 500mg = distance from adult index fingertip to 1st the crease). | |

| Topical corticosteroids according to potency (for adult & children) | |
|---|---|
| Mild | Hydrocortisone 0.1-2.5% |
| Moderate | Clobetasone butyrate 0.05% |
| Potent* | Betamethasone valerate 0.1%<br>Betamethasone dipropionate 0.05%<br>Hydrocortisone butyrate 0.1%<br>Mometasone Furoate 0.1% |
| Very potent* | Clobetasol propionate 0.05% |
| * Generally avoided on the face & skin flexures unless under specialist supervision | |

| Prescribing corticosteroid for specific conditions in children | |
|---|---|
| | Recommended corticosteroid |
| Insect bites & stings | Mild e.g. hydrocortisone 1% cream |

| | |
|---|---|
| Severely inflamed nappy rash | Infant >1mth: Mild e.g. hydrocortisone 0.5-1% for 5-7 days (combined with antimicrobial if infected) |
| Mild-moderate eczema, flexural & facial eczema or psoriasis | Mild e.g. hydrocortisone 1% |
| Severe eczema on trunk & limbs | Children >1yo: Moderately potent/potent preparation for 1-2wks only, then switch to less potent preparation as condition improves |
| Eczema affecting area with thickened skin (e.g. soles of feet) | Potent preparations combined with urea/salicylic acid (to increase corticosteroid penetration) |
| Inflammatory perioral lesions –on lips & surrounding skin | Hydrocortisone 1% cream up to 1wk (combined with miconazole if infected with Candida spp. & Gram positive bacteria) |

## D07 CORTICOSTEROIDS

| **BETAMETHASONE 17-VALERATE (BETNOVATE FULL STRENGTH-G)** | |
|---|---|
| Prep | Cream/Ointment 0.1%, 15g |
| Dose:<br>*For eczema, prurigo nodularis, psoriasis (excluding plaque psoriasis), seborrhoeic, Discoid lupus erythematosus, neurodermatoses, insect bite reactions, prickly heat & adjunct to systemic steroid therapy in generalised erythroderma.* | |
| Admin | Apply thinly 1-2 times daily. Use >100g per week likely to cause adrenal suppression. |
| Notes | • Potency: potent |

| **BETAMETHASONE & NEOMYCIN (BETNOVATE N - G)** | |
|---|---|
| Prep | Cream Betamethasone 0.1%/Neomycin 0.5%, 15g |
| Dose:<br>*Treatment of the conditions where secondary bacterial infection is present/suspected/occur; Eczema, prurigo nodularis, psoarisis (excluding plaque psoarisis), lichen simplex, lichen planus, seborrhoeic dermatitis. Suitable for use in children at the same dose as adults, but the dose should be reduced for use in infants. Not recommended for use in neonates.* | |
| Admin | A small quantity applied to affected area 2-3 times/day until improvements occurs. It may then possible to maintain by applying once a day. |
| Notes | • Potency: potent<br>• Appropriate for most or weeping surfaces.<br>• Long term used should be avoided – caused adrenal suppression<br>• Not recommended in pregnancy/lactation due to neomycin present in maternal blood can cross the placenta – risk of foetal toxicity. |

| **BETAMETHASONE 17-VALERATE** | |
|---|---|
| Prep | Cream Betamethasone 17-valerate 1: 4 |
| Dose:<br>*Topical corticosteroids are indicated for the relief of the inflammatory and pruritic manifestations of corticosteroid-responsive dermatoses.* | |
| Admin | Apply a thin film to the affected skin areas 1-2 times/day and massage lightly until it disappears. |
| Notes | • Teratogenic Effects—Pregnancy Category C. |

| **CLOBETA<u>SOL</u> PROPIONATE (DERMO<u>VATE</u>-G)** | |
|---|---|
| Prep | Cream 0.05% (15g) & Ointment 0.05% (15g) |
| Dose:<br>Apply thinly 1-2 times daily. Maximum duration 4 weeks. Weekly dosage not more than 50g per week in adults | |
| Notes | • Potency: Very Potent<br>• Contraindicated in child < 1 yr. |

| **CLOBETA<u>SONE</u> BUTYRATE (<u>EUMO</u>VATE-G)** | |
|---|---|
| Prep | Cream 0.05% (15g) & Ointment 0.05% (15g) |
| Dose:<br>Apply thinly up to 4 times daily. Reduce frequency when condition improves | |
| Notes | • Potency: Moderate |

| **HYDROCORTISONE** | |
|---|---|
| Prep | Cream 1% (15g) & Ointment 1% (15g) |
| Dose:<br>Apply thinly 1-4 times daily. | |
| Notes | • Potency: Mild<br>• Do not use around eye area |

| **MOMETASONE FUROATE (ELOMET-G)** | |
|---|---|
| Prep | Cream 0.1% (15g) & Ointment 0.1% (15g) & Lotion 0.1% (30mL) |
| Dose:<br><u>Cream / Ointment</u> Apply thinly once daily. Maximum duration 3 weeks<br><u>Lotion</u> Apply few drops to affected areas including scalp once daily. Massage gently till medication thoroughly dissapears | |
| Notes | • Potency: Potent<br>• Should not be applied to the breast prior to nursing |

## D08 ANTISEPTICS AND DISINFECTANTS

| **ACETIC ACID** | |
|---|---|
| Prep | Solution 0.5% and 5% |
| Dose:<br>*Antiseptic & disinfectant. Also for jellyfish stings, wounds & burns infection, warts & callosities.* | |

| | |
|---|---|
| Notes | • Have antibacterial, antifungal & antiprotozoal activity (reported to be effective against Haemophilus & Pseudomonas spp.) Also have astringent properties. |

| **ACRIFLAVINE** | |
|---|---|
| Prep | Lotion 0.1% (120mL) |
| Dose:<br>*Infected wounds/burns or skin infection*. Wash the affected part with clean water, dry it and apply lotion 2-3 times a day | |
| Notes | • Bacteriostatic against many gram positive bacteria. Less effective against gram negative bacteria. |

| **ALCOHOL** | |
|---|---|
| Prep | Solution 70% |
| Dose:<br>*Antiseptic and disinfectant* | |

| **ALCOHOL HAND RUB (SOFTAMAN/SEPTI-GARD)** | |
|---|---|
| Prep | Solution 500mL and 1L with hand pump |
| Dose:<br>*Hygienic and surgical hand disinfection (no rinse)* | |
| Notes | • Do not apply to injured skin |

| **CETRIMIDE** | |
|---|---|
| Prep | Solution 2%, Powder |
| Dose:<br>*Skin infections, wounds and burns* | |
| Notes | • Avoid use in body cavities & contact with eyes |

| **CHLORHEXIDINE 1:200 IN ALCOHOL WITH EMOLLIENT (HIBISOL/SEPTI-SOL)** | |
|---|---|
| Prep | Ethanol 77% v/v, Chlorhexidine gluconate 0.5%w/v (Solution 500mL with hand pump) |
| Dose:<br>*For hand disinfection of healthcare personnel (No-rinse hand sanitizer).* If skin/hands are visibly soiled, clean & dry hands before using solution. Then apply 1 pump onto hands & rub until dry. After 7-10 applications, wash hands with soap & water. | |

| **CHLORHEXIDINE DIGLUCONATE 20% + PROPANOL SOLUTION (DESMANOL)** | |
|---|---|
| Prep<br>Policies | Each 100g contain 32.25g 1-propanol, 20.99g 2-propanol, 4.2g Chlorhexidine gluconate solution 20%. (Solution 1L with hand pump) |
| Dose:<br>*For hygienic and surgical hand disinfection (No-rinse hand sanitizer).* Hygienic and surgical hand disinfection: Rub 3mL into hands for 30secs. Surgical hand disinfection: Rub 2x5mL into hands & forearms for 3mins. | |
| Notes | • Do not keep near electrical heat source<br>• Bactericidal, fungicidal, virucidal |

| **CHLORHEXIDINE GLUCONATE 0.05% W/V IRRIGATION SOLUTION** | |
|---|---|
| Prep | Solution 500mL |
| Dose: *Antiseptic solution* | |
| Notes | • Not to be used for irrigating eye, brain, meninges or perforated eardrum. Do not mix with detergents or other chemicals. Discard within 24 hrs after opening |

| **CHLORHEXIDINE DIGLUCONATE 2% SOLUTION IN 70% ALCOHOL** | |
|---|---|
| Prep | Solution 500mL |

| **CHLORHEXIDINE GLUCONATE 4% FOAM SCRUB (SURGISCRUB)** | |
|---|---|
| Prep<br>Policies | Chlorhexidine gluconate 4%, Isopropyl alcohol 4% (Solution 800mL with foot pump ) |
| Dose:<br>*Surgical handscrub, Healthcare personnel handwash, general skin cleansing.*<br>Surgical hand scrub: Remove all jewellery on hands and wrist. Wet hands and forearms with water and then apply 1 pump of scrub and scrub for 3 mins paying attention to nails, cuticles and interdigital spaces. Rinse thoroughly and repeat the above procedure once again<br>Healthcare personnel handwash: Wet hands and forearms with water and apply 1 pump of scrub. Scrub for 3 mins and then rinse and dry thoroughly.<br>General skin cleansing: Rinse area with water, apply minimum amount, wash gently and rinse thoroughly with water. | |
| Notes | • Use undiluted |

| **CHLORHEXIDINE GLUCONATE 4% SOLUTION (HIBISCRUB)** | |
|---|---|
| Prep<br>Policies | Chlorhexidine gluconate 4%, Isopropyl alcohol 4% (Solution 500mL with hand pump) |
| Dose:<br>*As a surgical hand scrub, healthcare personnel handwash & general skin cleansing*.<br>Surgical hand scrub: Wet hands and forearms with water and apply 5mL. Scrub for 3 mins, paying attention to nails, cuticles and interdigital spaces. Rinse with water and repeat the above procedure once more.<br>Healthcare personnel handwash: Wet hands and forearms with water and apply 3-5mL. Scrub for 1 min and then rinse and dry thoroughly.<br>General skin cleansing: Rinse area with water, apply minimum amount, wash gently and rinse thoroughly with water. | |
| Notes | • Use undiluted |

| **CHLORHEXIDINE GLUCONATE 5% SOLUTION (HIBITANE)** | | |
|---|---|---|
| Prep | Chlorhexidine gluconate 5%w/v, isopropyl alcohol 3.15%w/v (Solution 5L) | |
| Dose: | | |
| Preparation | Dilution | Use |
| 10 mL made up to 1L with water (1 in 100) | 1 in 2000 (0.05%) aqueous | Swabbing in obstetrics, wounds, burns<br>Storage of sterile instruments |
| 10 mL with 15mL water made up to 100mL with 95% | 1 in 200 (0.5%) in 70% alcohol | Pre-operative skin disinfection<br>Emergency instrument disinfection (2mins immersion – excluding endoscopes |

| | | |
|---|---|---|
| alcohol (1 in 10) | | containing cemented glass components) |

*Antimicrobial agent for general antiseptic purposes*.

| | |
|---|---|
| Notes | • Effective against a wide range of bacteria, inhibit some viruses and is active against some fungi<br>• Avoid contact with brain, meninges and middle ear |

| **CHLORHEXIDINE IN SPIRIT 1:200 (0.5%)** | |
|---|---|
| Prep | Solution 100mL |
| Dose:<br>*For skin cleansing and disinfectant* | |
| Notes | • Apply at newborn's umbilical cord 1-2 times daily. |

| **CHLORHEXIDINE OBSTETRIC CREAM 1%** | |
|---|---|
| Prep | 1L |
| Dose:<br>*Antiseptic and disinfectant* | |
| Notes | • Bacteriocidal or bacteriostatic against a wide range of gram-positive and gram-negative bacteria.<br>• Avoid contact with brain, meninges or perforated ear drum |

| **HYDROGEN PEROXIDE 6%** | |
|---|---|
| Prep | Hydrogen Peroxide 6% w/v, Benzoic Acid 0.01% w/v (Solution 500mL) |
| Dose:<br>*First Aid for minor cuts wounds ulcers abrasions*: Dilute 1 part hydrogen peroxide with 1 part water. Apply diluted solution with lint or cotton wool onto affected area. Allow oxygen to escape and dress with bandage or adhesive plaster.<br>*To remove dressing from wound*: Dilute 1 part hydrogen peroxide with 1 part water. Soak the dressing thoroughly with the diluted solution and leave for few mins before removal<br>*Mouthwash*: Add 1 tbsp to half tumbler of water and use when necessary | |
| Notes | • Do not use undiluted. For gargle/mouthwash for > 8 yrs old: use one spoonful in half glass of water. |

| **INDUSTRIAL METHYLATED SPIRIT (IMS)** | |
|---|---|
| Prep | Solution 95% (5L) |
| Dose:<br>*Skin preparation and disinfection* | |
| Notes | • Ability to remove fungal infection from skin |

| **POTASSIUM PERMANGANATE (KMnO4)** | |
|---|---|
| Prep | 1:10000 Solution (2% solution) & 1:20000 Solution (5% Solution) |
| Dose:<br>*For cleansing of wounds, ulcers & abscesses, & as wet dressings. Used in baths for eczematous conditions & acute dermatoses with secondary infection. Also for mycotic infections e.g. athelete's foot.*<br>2% Solution: Dilute 5mL to 1L of water. 5% Solution: Dilute 10mL to 4.5L of water | |
| Note | • Effective for eczema with blisters, pus and oozing. Twice daily bath for 2 |

| | |
|---|---|
| | days to dry weeping sores and sooth eczema<br>• Effective for ulcers and abscesses. Use as wet soaks and wrap around the area for 20-30 min.<br>• Treatment should be stopped when skin becomes dry. Can stain skin/nail on prolonged use. |

| **POVIDONE IODINE** | |
|---|---|
| Prep | Solution 10%w/v (100mL and 500mL) and Scrub 7.5% (800mL with foot pump) |
| Dose:<br>*Disinfectant and antiseptic for contaminated wounds, cuts, burns. Preoperative preparation of skin and mucous membrane.*<br>Solution: Clean the affected areas and apply solution with cotton wool lightly and thoroughly<br>Scrub Surgical hand scrub: Remove all jewellery on hands and wrist. Wet hands and forearms with water and then apply 1 pump of scrub and scrub for 3 mins paying attention to nails, cuticles and interdigital spaces. Rinse thoroughly and repeat the above procedure once again. Pre-operative on patient skin: Wet operative site with water, apply scrub using sterile gauze, scrub for 5 mins, rinse with water using sterile gauze. | |
| Notes | • Avoid applying to large area of broken skin as excessive absorption of iodine may occur. Exercise caution in prolonged use in neonates |

| **SILVER NITRATE 0.5% SOLUTION** | |
|---|---|
| Prep | 120mL |
| Dose:<br>Apply compresses soaked in a 0.5% solution to severe burns to reduce infection | |
| Notes | • Also as topical antiseptics & astringents.<br>• Use in burn wound prophylaxis against infections. Application to burn wound is not painful. Due to limited solubility, it cannot be used to treat established infections<br>• Tends to stain overlying dressing materials brown/black |

| **SODIUM HYPOCHLORITE (CLOROX)** | |
|---|---|
| Prep | 1% (Solution 500mL) & 10% (Solution 2.5L) |
| Dose:<br>*For bleaching, disinfection and cleaning* | |
| Notes | 1% for Klinik Pergigian use only |

| **TINCTURE IODINE** | |
|---|---|
| Prep | Iodine 2.5% w/w, Potassium iodide 2.5% w/v (Solution 60mL) |
| Dose:<br>*Disinfectant* | |
| Note | • Caution in pregnancy and in breast feeding mothers ( causes hypothyroidism and goiter in fetus/nursing infants) |

## D09 MEDICATED DRESSINGS

| **CHLORHEXIDINE ACETATE TULLE GRASS DRESSING (BACTIGRASS)** | |
|---|---|
| Prep | Gauze of leno weave impregnated with White Soft Paraffin BP containing 0.5% Chlorhexidine Acetate BP. Size: 10x10cm, 15x20cm |
| Dose:<br>*Wounds where risk of infection is high, including minor burns, scalds, lacerations, abrasions, skin loss wounds, leg ulcers, donor and recipient graft sites.* Frequency of dressing change depends on clinical circumstances; vary from once daily to 2 times weekly. Cleanse wound before dressing. | |
| Notes | • Incompatible with soaps, skin cleansers, potassium iodide, Eusol and hydrogen peroxide. If the dressing sticks, soak it off gently with a sterile saline solution |

## D10 ANTI ACNE PREPARATIONS

| **6% SULPHUR IN CALAMINE LOTION** |
|---|
| Prep: 100mL |
| Dose:<br>*Keratolytic, mild antiseptic, mild antifungal & parasiticide.* Apply to skin 1-3 times daily. |

| **ADAPALENE 0.1% GEL (DIFFERIN)** | |
|---|---|
| Prep | Gel 0.1% (20g) |
| Dose:<br>*Acne vulgaris where comedones, papules and pustules dominate*. For acne on face, back or chest.<br>Apply on affected areas once daily after cleansing just before bedtime. | |
| Notes | • Ensure areas of application is dry before applying gel. Avoid eyes and lips. Use cosmetics that are non-comedogenic and non-astringent. Safety and efficacy in children below 12 years old have not been studied. |

| **BENZOYL PEROXIDE (PANOXYL-G)** | |
|---|---|
| Prep | 5% (Gel 20g) & 10% (Gel 60g) |
| Dose:<br>*Mild to moderate acne vulgaris*. Cleanse skin thoroughly. Apply thinly 1 time daily, then gradually increase to 3 times daily. If dryness or peeling occurs, reduce application to once daily. | |
| Notes | • Can bleach or discolor hair or colored fabrics. Stay out of the sun as much as possible and use a sunscreen as it can irritate skin |

| **ISOTRETINOIN (ROACCUTANE-G)** *(Do Not be confused with TRETINOIN 10MG CAP '**ALL-TRANS** RETINOIC ACID/VESENOID'- for leukemia)* | |
|---|---|
| Prep | Cap 10mg & 20mg |
| Dose:<br>*Severe forms of nodulo-systic acne and acne conglobata, especially lesions involve the trunk.* Initial dose 0.5mg/kg daily for 2-4 weeks. Maintenance dose continue dosage at 0.5mg/kg daily. If pt show signs of intolerance, reduce dose to 0.1-0.2mg/kg daily. In severe cases, increase to 1mg/kg daily if well tolerated. Maintenance dose to be given for 12 weeks. Interval of 8 weeks is required before restarting treatment. | |

| | |
|---|---|
| Notes | • Isotretinoin is highly teratogenic. Contraindicated in pregnancy or in all women of childbearing potential. Pt must be tested negative for pregnancy within 2 wks prior to starting treatment. Repeat monthly pregnancy test. Pt must use effective contraception 1 mth prior to starting and 1 month after discontinuation of isotretinoin. Pt must start isotretinoin treatment on 2nd or 3rd day of menstrual cycle. Even pts with history of infertility should employ precaution steps above. Preferred contraceptive is combination of estrogen/progesterone product. Dryness of lips can be relieved with Vaseline. |

| **TRETINOIN 0.05% CREAM (RETIN A-G)** | |
|---|---|
| Prep | Tretinoin 0.5mg in each gram (20g) |
| Dose:<br>*Acne vulgaris in which comedones, papules and pustules predominate*<br>Apply once daily to affected areas, preferable at bedtime after cleansing with soap and water. Allow drying before applying Tretinoin cream. Therapeutic results may be noticeable after 2-3 wks of therapy, but more than 6 wks therapy may be required for optimal result. After application, short sensation of warmth and burning may occur. Some redness and skin peeling may occur for several days after application but settles with time. During 1st-5th week of treatment, slight reddening of skin may occur. | |
| Notes | • Use of topical tretinoin is not recommended during pregnancy, especially during the first trimester. Contraindicated for pts with eczema, broken or sunburned skin. Exercise caution if used together with preparations containing sulphur, resorcinol or salicyclic acid. Tretinoin cream should not be applied to eyes, mouth or other mucous surface. Exposure to excessive sunlight should be avoided during treatment. |

## D11 OTHER DERMATOLOGICALS

| **HYDROQUINONE 4% CREAM (ELDOPAQUE FORTE)** | |
|---|---|
| Prep | 15g |
| Dose:<br>*Gradual bleaching of hyperpigmented skin conditions such as chloasma, melasma, freckles, senile lengtigines and other unwanted areas of melanin hyperpigmentation.*<br>Apply and rub in well to affected area 2 times daily or as directed by physician. | |
| Notes | • During the day, effective broad spectrum sunscreen should be used and unnecessary sun exposure should be avoided. Protective clothing should be worn to cover treated skin to prevent repigmentation from occurring. |

| **MAGNESIUM SULPHATE PASTE** | |
|---|---|
| Prep | 15g |
| Dose:<br>*Used to reduce swelling in boils and carbuncles ( rarely used ). Stir paste before use.* | |

| **SALICYLIC ACID 16.7%, LACTIC ACID 16.7% IN FLEXIBLE COLLODION BP (DUOFILM)** | |
|---|---|
| Prep | Solution 15mL |
| Dose:<br>*Corns, calluses & warts*. Soak lesion in hot water for 5min, dry thoroughly & apply once daily to affected area only, using the brush applicator supplied, until lesion is | |

| | |
|---|---|
| completely cleared & the ridge lines of the skin have been restored. Cover with plaster if lesion is large or on the foot for better penetration. | |
| Note | • Soak wart in hot water for 5 min. Use pumice stone to remove dead skin and dry. Apply 2-4 drops of duofilm on wart. Wait till dry before dropping next drop. Avoid application of Duofilm to surrounding normal skin/mucus membrane. Repeat treatment every 24 hrs. Improvement should be seen after 2-4 weeks of treatment. Max effects occurs after 6-12 wks. |

| **SELENIUM SULPHIDE 2.5% LOTION (SELSUN-G)** | |
|---|---|
| Prep | 120mL |
| Dose:<br>*Treatment of dandruff, seborrheic dermatitis of the scalp and tinea vesicolor*.<br>Dandruff and seborrheic dermatitis of scalp: Apply 5-10mL to wet hair, lather and leave on scalp for 4-6 mins. Rinse and repeat application. Hair should be rinsed thoroughly after treatment and all traces of lotion should be removed from hands and nails. Use 2x weekly for 2 wks then 1x weekly for 2 wks, then when necessary or as directed by physician.<br>Tinea vesicolor: Apply lotion undiluted to affected areas together with a small amount of water to form lather. Allow to remain 10 mins on skin then rinse thoroughly. Repeat daily for 1 wk or as directed by physician. | |
| Notes | • Avoid using 48 hours before or after permanent waving, tinting or bleaching. |

| **TRICHLORO ACETIC ACID 100% (TCA)** | |
|---|---|
| Prep | Solution |
| Dose:<br>*Used as a quick escharotics (corrosive) for warts*: 10 g plus water 1 g. Protect surrounding areas. Also used to stop nasal bleeding especially in children. See Chapter ENT. | |
| Notes | • Also used in cosmetic surgery for chemical skin peeling & tattoo removal. |

# CLASS G. GENITO URINARY SYSTEM AND SEX HORMONES

## G01 GYNAECOLOGICAL ANTI-INFECTIVES AND ANTISEPTICS

- Clotrimazole is effective against candida in short courses of 1-14 days. Treatment can be repeated if initial course fails. Vaginal applications may be supplemented with antifungal cream for vulvitis and to treat other superficial sites of infection.
- Ensure pessaries are inserted HIGH into the vagina ( including during menstruation as deeply as possible.
- Single dose preparation offer an advantage when compliance is a problem.
- *Vulvaginal candidiasis in pregnancy* need longer duration of treatment usually about 7 days to clear the infection. Can use vaginal application and a topical cream. Avoid oral antifungal.
- *Recurrent vulvavaginal* candidiasis may need to be extended for 6 months

| **ACETIC ACID** | |
|---|---|
| Prep | **0.5 % solution** |
| Dose:<br>*Use as disinfectant/antiseptic in jellyfish sting/P. aeruginosa infection of wound and burns:* Topical: Apply 15 mins on wound 2 times/day for 1 to 2 weeks. | |

| **CLOTRIMAZOLE (CANESTAN-G)** *(Do not be confused with **Co**-tri**moxa**zole)* | |
|---|---|
| Prep | Vaginal Tab 100mg & 500mg, Cream 1% |
| Dose:<br>*Acts on dermatophytes, yeast and other fungi. It is also effective against Trichomonasvaginalis, gram-postive microorganism (Streptococci/Staphylococci) and gram-negative microorganisms (Bacteroides/Haemophilusvaginalis)/Vulvogaginal candidiasis:* Vaginal: *First infection*: 200mg for 3 nights or 500mg at night as single dose, course may be repeated once if necessary. *Reinfection*: 100mg for 6 nights or 100mg in the morning, and 100mg at night for 6-12 days. Topical: Apply 2-3 times daily to the anogenital area. | |
| Admin | Insert into vagina as deep as possible using the applicator.<br>Treatment should be timed to avoid menstrual period & be finished before the onset of menstruation. |
| Notes | • If symptoms persist >7days, reconsult doctor.<br>• Avoidance of vaginal intercourse is recommended.<br>• Damages latex condom & diaphragms<br>• A second course/treatment maybe necessary<br>• Store <25$^{o}$C, protect from light & excessive heat.<br>• For other indications, refer Chapter A01 Stomatological Preparations and Chapter D01 Antifungals For Dermatological Use |

| **DEQUALINIUM CHLORIDE (FLUOMIZIN)** | |
|---|---|
| Prep | Vaginal Tab 10mg |
| Dose:<br>*Treatment of bacterial vaginosis, Vulvovaginal candidiasis,Trichomoniasis, aerobic bacterial vaginal infections and mixed infections, achievement of asepsis before* | |

| | |
|---|---|
| *gynaecological operations and deliveries:* Vaginal: 1 vaginal tab daily in the evening for 6 nights. | |
| Admin | Insert deeply into the vagina.<br>Treatment should be interrupted during menstruation & resume there after. |
| Notes | • Since fluomizin contains excipients that doesn't dissolve completely, some remains may be seen in the panties.Patients should use sanitary towel or panty liner.<br>• For woman with dry vagina, it is recommended to moistened the tablet first with drops of water before insertion, as dry vagina may cause the tablet to be discharged as intact tablet.<br>• Avoid douches or vaginal rinses. Avoid during 1st trimester of pregnancy<br>• Treatment should be continued even when there is no discomfort (itching, discharge, smell) anymore. Therapy <6days can cause relapse. |

| **NYSTATIN** | |
|---|---|
| Prep | Pessary 100,000 Units, 500,000 Unit Tab (Mycostatin), Susp. 100,000iu/Ml, 60ml (Mycostatin), 100,000iu/G Cream, 30g |
| Dose:<br>*Treatment of bacterial vaginosis, Vulvovaginal candidiasis, aerobic bacterial vaginal infections and mixed infections:* Intravagina:100,000 IU/day 1 pessary once daily for 2 weeks. *Prevent thrush to newborn in pregnant women:* Intravagina:100,000 IU/day 1 for 3-6 weeks prior to delivery. | |
| Notes | • Store <25°C. Protect from light.<br>• For other indications, refer to chapter A07 Antidiarrhoeals, intestinal antiinflammatory/antiinfective agents and chapter D01 Antifungals for Dermatological use. |

## G02 OTHER GYNAECOLOGICALS

| **ATOSIBAN ACETATE (TRACTOCILE)** | |
|---|---|
| Prep | Inj 37.5mg/5mL, Inj 6.75mg/0.9mL |
| Policy | A*: O&G specialists only. |
| Dose: *To delay imminent pre-term birth in pregnant women with regular contractions of at least 30 sec duration at a rate of >4/30 min, cervical dilation of 1-3cm, effacement of >50%, age >18 years,gestational age from 28-33 completed weeks, normal fetal heart rate:* Administered intravenously in 3 stages.<br>1st stage : IV Bolus:6.75mg(0.9mL) over 1 minute,<br>2nd stage : Loading IV infusion: 18mg/hour for 3 hours (infusion rate of 300mcg/min or 24mL/hour),<br>3rd stage: IV infusion: 6mg/hour for up to 45 hours (infusion rate of 100mcg/min or 8mL/hour). | |
| Admin | • Initially, IV bolus: 0.9mL (6.75mg)(undiluted) to be injected over 1min<br>• Loading IV infusion and subsequent infusion: Dilute 4 vials of 5mLTractocile in 80mL NS (Final concentration: 1.5mg/mL).<br>• Infusion rate (using 1.5mg/mL solution): 1st 3 hours for 12mL/hr (18mg/hr) then continue with 4mL/hrs (6mg/hr) for subsequent infusion.<br>• Use NaCl, Ringer's lactate or D5% for dilution |
| Notes | • Total number hours of administration : 48 hours.Total dose given during a full course should not exceed 330mg of the active ingredient (1mL |

| | |
|---|---|
| | solution contains 7.5mg Atosiban free base in the formed atosiban acetate).<br>• Re-treatment is possible up to 3-retreatments.<br>• Store at 2-8 °C. Once vial is opened, use product immediately.<br>• Diluted solution for IV administration should be used within 24hours. |

| **BROMOCRIPTINE (PARLODEL-G)** | |
|---|---|
| Prep | Tab 2.5mg |
| Dose: *Parkinsonism:* PO: 1-1.25 mg once at night for 1 wk. 2-2.5mg at night at 2nd week, 2.5mg 2time/daily at 3rd week, 2.5mg 3times/daily at 4th week, then increasing by 2.5mg every 3-14 days according to response. Usual range is 10-30mg daily. *Acromegaly and Prolactinoma:* PO Initially 1.25mg at bedtime, increase gradually to 5mg every 6 hours. (For prolactinoma may require up to 30mg daily occasionally); *Prevention/ Supression of lactation:* PO 2.5mg at night day 1 (prevention) or daily for 2-3 days (suppression), then 2.5mg twice daily for 14 days. *Hypogonadism, galactorrhoea, infertility:* PO: Initially 1.25mg at bedtime, increase gradually up to 7.5mg in divided doses. Max 30mg daily; *Infertility without hyperprolactinaemia*:PO: 2.5mg 2 times/daily; *Menstrual cycle disorders and female infertility:* PO 1.25mg at night, increased gradually till 7.5mg per day in divided doses; *Infertility without prolactinaemia*: PO: 2.5mg twice daily. | |
| Admin |  |
| Notes | • Children < 15 yo, not recommended.<br>• If adequate response for Parkinsonism is not achieved within 6-8 weeks, daily dose may be further increase by 2.5mg/day weekly.<br>• Should not be used for post-partum or in puerperium in women with high BP, Coronary artery disease or serious mental disorder. Monitor BP especially during first few days in postpartum women.<br>• For other indications, refer to chapter N04 Anti-Parkinsonism. |

| **CABERGOLINE (DOSTINEX)** | |
|---|---|
| Prep | Tab 0.5mg |
| Policy | A*: Endocrinologists , O&G specialists & breast surgeons only. |
| Dose: Only for patients with pituitary tumours unresponsive or contraindicated to surgery and radiotherapy and for hyperprolactinaemia. *Prevent lactation:* PO 1mg stat during the first post-partum day. *Suppression of established lactation:* PO 0.25mg 2x/day for 2 days (1mg total dose). *Treatment of Hyperprolactinaemia Disorders:* PO: 0.25 mg tab 1-2 times/week. Dose can be increased by 0.5mg/week at monthly intervals. Dose may range from 0.25mg-2mg/week. | |
| Admin |  |
| Notes | • For other indications, refer to chapter N04 Anti-Parkinsonism.<br>• Not recommended for children <16yo.<br>• Do not store >25°C |

| **CARBOPROST (AS TROMETHAMINE SALT) (HEMABATE)** | |
|---|---|
| Prep | Inj 250mcg/mL (1mL) |
| Dose: *For post-partum haemorrage:* Initially IM: 250mcg, if needed repeat 1½ hours later at 15-90 minutes interval, max 2mg (8 doses). *For abortion in 2nd trimester pregnancy,(13th-20th week)* IM: Initially 250mcg, subsequently doses (250mcg) at 1½ - | |

| | |
|---|---|
| 3½ hours intervals. Max total dose : 12mg and continuous administration for more than 2 days is not recommended. | |
| Admin | • An initial dose of 1mL of HEMABATE Sterile Solution ( 250mcg carboprost) administered deep in the muscle with a tuberculin syringe.<br>• An optional test dose of 100mcg (0.4mL) may be administered. Increase to 500mcg (2mL) if uterine contractility is judged to be inadequate after several doses of 250mcg (1mL). |
| Notes | • Fridge item (2-8$^{o}$C).<br>• Carboprost has an important role in severe postpartum hemorrhage unresponsive to oxytocin and ergometrine. |

| **DINOPROSTONE (PROSTIN E2) [PROSTAGLANDIN E2]** | |
|---|---|
| Prep | Vaginal Tab 3mg |
| Dose*: Induction of labour:*Vaginal:3mg followed after 6-8 hr by 3mg if needed; max 6mg/day. | |
| Admin | One tablet (3mg) to be inserted into the posterior fornix. A second vaginal tablet may be inserted after 6-8 hours if labour is not established. Maximum dose 6mg ( 2 tablets). |
| Notes | • Fridge item (2-8$^{o}$C). Protect from light. |

| **OXYTOCIN & ERGOMETRINE MALEATE (SYNTOMETRINE)** | |
|---|---|
| Prep | Inj Oxytocin 5 IU/Ergo 0.5mg per 1mL |
| Dose:*Management of 3rd stage of labour:* IM 1mL following delivery of the anterior shoulder or immediately following delivery of infant. *Prevention and Treatment of postpartum haemorrhage associated with uterine atony:* IM 1mL after the expulsion of the placenta or when bleeding occurs. Repeat after 2hrs if needed, max 3mL within 24h. IV bolus: possible (0.5-1mL by slow injection but NOT normally recommended). | |
| Notes | Fridge item. IV administration of ergometrine is associated with the risk of sudden hypertensive or cerebrovascular accident, therefore should only be given if absolutely necessary. |

| **GEMEPROST (CERVAGEM) [PROSTAGLANDIN E1]** | |
|---|---|
| Prep | Pessary 1mg |
| Dose:*Softening & dilation of cervix to facilitate transcervical operative procedure in 1st trimester:*Vaginal: 1mg into the posterior vaginal fornix 3 hours before surgery. *Termination of 2nd trimester pregnancy:*Vaginal: 1mg into the posterior vaginal fornix at 3 hourly intervals, max 5 doses. If abortion is not established,second course of treatment can be started 24hours after the initial commencement. *2nd trimester intrauterine fetal death:*Vaginal:1mg into the posterior vaginal fornix at 3 hourly intervals, max 5 doses. | |

| **LEVONORGESTREL 52MG INTRA UTERINE SYSTEM (MIRENA)** | |
|---|---|
| Prep<br>Policy | Inj 52mg<br>A*: O&G specialists only. Only for inpatient use. Usage limit : 30 patients only. For contraception indication, patients have to buy from Farmasi NF. |
| Dose:*Idiopathic menorrhagia and endometrial hyperplasia duringoestrogen replacement therapy/ contraception :* Intra uterine: 1 system to be inserted into uterine cavity within 7 days of the onset of menstruation (fertile age women). | |
| Admin | • The release/dissolution rate is 20mcg/24 hours initially and reduced to |

| | |
|---|---|
| | 10mcg/24 hours after 5 years.<br>• Post-partum insertions should be done at least 6weeks after delivery. If inovulation is delayed, wait until 12 weeks post partum.<br>• When inserted for endometrial protection, Mirena can be inserted at anytime in amenorrheic woman, or during last day of menstruation/withdrawal bleeding.<br>• The system can be inserted immediately after first trimester abortion. |
| Notes | • System should be removed after 5 years and new system to be inserted if wish to continue. It should be handled by trained personnel with aseptic precautions.<br>• In women under HRT ,Mirena can be combined with oral or transdermal oestrogen without progestogens.<br>• Mirena is supplied in sterile pack. If the seam of the sterile package is broken, the product should be discarded. |

| **MISOPROSTOL (CYTOTEC)** | |
|---|---|
| Prep | Tab 200 mcg |
| Policy | A*:O&G Specialists only |
| Dose:**1st trimester**: *Induced abortion*: Vaginal/PO: 800mcg 3 hourly (max 3 times within 12 hours); *Missed abortion*: Vagina: 800mcg 3 hourly (max 2 times), Sublingual: 600mcg 3 hourly (max 2 times); *Incomplete abortion* :PO: 600mcg stat Sublingual: 400mcg stat; cervical ripening pre-instrumentation: Vagina/sublingual: 400mcg 2-3hours before procedure. **2nd trimester**: *Induced abortion/interruption of pregnancy*: Vagina/Sublingual: 400mcg 3hourly (max 5 times). Halve dose if previous c-sect or uterine scar; *intrauterine fetal death 13-17 weeks:* Vagina: 200mcg 6hourly (max 4 times), *Intrauterine foetal death 18-26 weeks*: 100mcg 6 hourly (max 4times)**3rd trimester**: Intrauterine foetal death/*Induction of labour*: Vagina: 25mcg 6 hourly, PO: 25mcg 2hourly; *Post-partum haemorrhage treatment* : Sublingual: 800mcg stat, *Post-partum haemorrhage prophylaxis:* PO: 600mcg stat | |
| Admin | • Can be given as oral, buccal, sublingual, rectal & vagina |
| Notes | • Dosing are according to FIGO 2012 Guidelines<br>• Store <30$^{o}$C. |

## G03 SEX HORMONES & MODULATORS OF THE GENITAL SYSTEM

- Oestrogens are necessary for the development of female secondary sexual characteristics; they also stimulate myometrial hypertrophy with endometrial hyperplasia.
- Oestrogen therapy is given cyclically or continuously for a number of gynaecological conditions. If long term therapy is required in women with a uterus, a progestogen should normally be added to reduce the risk of hyperplasia of the endometrium.
- Hormone replacement therapy (HRT) with small doses of an oestrogen (together with progestogen in women with a uterus) is appropriate for alleviating menopausal symptoms.
- Oestrogen is given systemically in the perimenopausal and postmenopausal period.
- HRT may be used in women with early natural or surgical menopause (before age of 45), since they are at high risk of osteoporosis.HRT can be given until the approximate age of natural menopause (i.e. until age 50 years)

- Choice of HRT for an individual depends on an overall balance of indication, risk and convenience. A women with uterus normally requires oestrogen with cyclical progestogen for the last 12 to 14 days of cycle or a preparation which involves continuous administration of an oestrogen and progestogen.

| **17B ESTRADIOL /DYDROGESTERONE (FEMOSTON 1/10)** | |
|---|---|
| Prep | Tab 1mg Estradiol/10mg Dydrogesterone |
| Policy | A*: O&G Specialists and O&G medical officers only |
| Dose:*Hormone replacement therapy with disorders due to the natural or surgically induced menopause with intact uterus:* PO: 1 tab containing 1mg estradiol daily during 14 consecutive days per cycle of 28 daysand 1 tab containing 1mg estradiol and 10mg dydrogesterone daily during the remaining 14 days has to be taken. | |
| Admin | ±  |
| Notes | • Immediately after 28-day cycle, the next treatment cycleis to be started.<br>• If patient still menstruating, it is recommended to begin treatment on the first day after the onset of menstruation.<br>• If patient is still menstruating infrequently, begin treatment after 10-14 days monotherapy of progesteogen ("chemical curettage").<br>• If patients had their last period more than 12months ago, treatment can be started anytime.<br>• Store <30$^{o}$C |

| **17B ESTRADIOL /DYDROGESTERONE (FEMOSTON CONTI)** | |
|---|---|
| Prep | Tab 1mg/5mg |
| Policy | A*: O&G Specialist and medical officer only |
| Dose: *Hormone replacement therapy for the relief of symptoms due to estrogen deficiency & prevention of post menopausal osteoporosis in women with intact uterus:* PO: One tab once daily taken without a break between packs. | |
| Admin | ±  |
| Notes | • Should be used only in post menopausal women > 12 months after menopause. |

| **CLOMIPHENE CITRATE (CLOMID-G)** | |
|---|---|
| Prep | Tab 50mg |
| Dose:*Treatment of infertility in women with ovulatory failure:*PO:One tab once daily for 5 days starting on or about the 5th day of the menstrual cycle or anyany time if there is amenorrhea. If no ovulation, one tab twice daily for 5 days. | |
| Admin | ±  |
| Notes | • Store <25 $^{o}$C. Protect from light & moisture.<br>• Should not be used longer than 6 cycles (risk of ovarian cancer).<br>• Ovulation occurs from 5-10 days after a course of clomiphene.<br>• An adequate therapeutic trial is 3 courses. |

| **CONJUGATED ESTROGEN CSD (PREMARIN)** | |
|---|---|
| Prep | Cream (14g) |
| Dose: T*reatment of atrophic vaginitis, dyspareunia and kraurosis vulvae.* Half to 2g | |

| | |
|---|---|
| once daily, intravaginally depending on the severity of the condition. | |
| Admin | • Administration should be cyclic ( 3weeks on and 1week off)<br>• Each cream comes with applicator to be inserted into the vagina. The applicator is to be washed with mild soap & warm water. It should NOT be boil or use hot water to sterilize |
| Notes | • Each gram contains natural conjugated 0.625mg in a non-liquefying base.<br>• Store between 15-30 $^{o}$C. Protect from light. |

| **CONJUGATED OESTROGEN (PREMARIN)** | |
|---|---|
| Prep | Tab 0.3mg and 0.625mg |
| Dose:*Vasomotor symptoms, atrophic vaginitis & atrophic urethritis associated with estrogen deficiency/ female hypoestrogenisme:* PO : 0.3mg-1.25mg once daily administered continuously or cyclically ( 3 weeks on and 1 week off). *Osteoporosis*: PO: Initially 0.3mg daily, adjust dose according to bone mineral density responses. | |
| Admin | ±  |
| Notes | • Doses adjusted depending on the severity of symptoms and responsiveness of the endometrium.<br>• Store <30$^{o}$C |

| **CYPROTERONE ACETATE (ANDROCUR-G)** | |
|---|---|
| Prep | Tab 50mg |
| Policy | A*: Endocrinologists, Pediatrics, Oncologists & Surgeons only. |
| Dose: *Treatment of Idiopathic precocious puberty in children, severe signs of androgenisation in women:* PO: Women: 100mg *daily* from Day 1 – Day 10 of cycle combined with 1 tab of Diane-35 daily for 21 days, followed by a 7 day tablet free interval. Following clinical improvement, dose can be reduced to 25-50mg daily. Postmenopausal & hysterectomized women: 25-50mg once daily for 21 days, followed by a 7 day tablet free interval. It can be given alone without combination with Diane-35. A*ntiandrogen treatment of inoperable prostate carcinoma and reduction of drive in sexual deviations in men:* PO: Initially 50mg twice daily, can increase up to 100mg 2-3 times/daily for a short period of time. *Suppression of "flare" with initial GnRHagonists therapy*: Initially 100mg 2 times/daily alone for 5-7 days, then 100mg 2times/daily for 3-4 weeks combined with an GnRH agonist. *Long-term palliative treatment without orchidectomy (surgical removal of the testis*): PO: 100mg 2-3 times/dail. *Treatment of hot-flushes (in patients treated with GnRH agonist or post-orchidectomy)*: 50-150mg/daily up to 100mg 3 times/daily. | |
| Admin | After food  with some liquids. |
| Notes | • If spotting occurs during the combination of cyproterone & Diane-35, tablets should not be interrupted.<br>• Store <25$^{o}$C. Protect from light & moisture. |

| **DANAZOL (LADOGAL-G)** | |
|---|---|
| Prep | Tab 100mg and 200mg |
| *Dose: Endometriosis:* PO: Initially 800mg in 4 divided dose, and maintained at 200mg-800mg/daily in 2-4 divided dose for 3-6 months, max 9 months. *Menorrhagia*: PO: 200-400mg daily in divided doses for up to 6 months. *Fibrocystic breast disease*: PO: 200mg-400mg for 3-6 months. *Hereditary angioedema*: 200-600mg in divided doses. | |

| | |
|---|---|
| *Gynaecomastia*: PO: **Adolescent**: 200mg daily, increased after 2 months to 400mg daily if no response occur. **Adults**: 400mg daily for 6 months. *Severe cyclical mastalgia:* PO: 200-300mg daily for 3-6 months. | |
| Admin | ±  |
| Notes | Store <25$^{o}$C. Protect from light & moisture. |

| **DYDROGESTERONE (DUPHASTON)** | |
|---|---|
| Prep | Tab 10mg |
| Policy | A*:O&G specialists only. |
| Dose:*Hormone Replacement Therapy for women with disorders due to naturally or surgically induced menopause with an intact uterus:* PO: 10mg od from day 15-28 of each 28 day estrogen therapy. May increase to 10mg twice daily of withdrawal bleed is early or endometrial biopsy/ultrasound show inadequate progestational response; *Dysfunctional bleeding (to stop bleeding):* PO: 10mg bd for 5-7 days. *Dysfunctional bleeding (to prevent bleeding):*PO: 10mg bd from Day 11 – Day 25 of cycle. *Dysmenorrhoea*: PO : 10mg bd from Day 5-Day 25 of cycle. E*ndometriosis*: PO: 10mg q8-12h from Day 5-Day 25 of cycle or continuously. *Amenorrhoea*: PO: 10mg bd from Day 11- Day 25 of cycle, combined with oestrogen from Day 1 – Day 25 of cycle. *Premenstual syndrome/ Irregular cycles*: PO: 10mg bd Day 11- Day 25 *Threatened abortion*: PO: 40mg stat, then 10mg q8h until symptoms abate. *Habitual abortion*: PO: 10mg bd until 20$^{th}$ week of pregnancy. *Infertility due to low luteal (yellow body) insufficiency*: PO: 10mg from Day 14-Day 25 of cycle. Continue for at least 6 consecutive cycles | |
| Admin | ±  |
| Note | Store <30$^{o}$C |

| **ESTRADIOL + DROSPIRENONE (ANGELIQ)** | |
|---|---|
| Prep | Tab 1mg/2mg |
| Policy | A*: O&G specialists only |
| Dose:*Treatment of post menopausal osteoporosis to reduce the risk of vertebral and hip fractures.* PO: One tab once daily for 28 days. | |
| Admin | ±  Swallow whole with some liquid. Take tablet same time everyday. |
| Notes | • Treatment is continuous. Start new pack immediately without break. |

| **ESTRADIOL VALERATE (PROGYNOVA)** | |
|---|---|
| Prep | Tab 2mg |
| Dose:*HRT for menopausal symptoms and prevention of post-menopausal osteoporosis:* PO: One tab once daily continuously. For women with intact uterus & still menstruating, concomitant use with a progesterone should begin within the first 5 days of menstruation. Amenorrhea/very infrequent periods/post-menopausal may start a combination regimen at any time. | |
| Admin | ±  |
| Notes | • Hysterectomized patient may start anytime.<br>• Women changing from other HRT should complete the current cyle before initiating Progynova. |

| | |
|---|---|
| | • Tablets should be taken at the same time everyday.<br>• Swallow tablets whole. |

| **FOLLITROPIN ALFA (GONAL-F)** | |
|---|---|
| Prep<br>Policy | Inj 75IU<br>A*:O&G specialists . For treatment of infertility (for staff only) |
| Dose:*Stimulation of follicular development in women with severe LH and FSH deficiency including Polycystic Ovarian Disease (PCOD):* SC: 75-150 IU FSH daily , may be increased by 37.5-75IU at 7 or 14 days intervals. Max daily dose 225 IU FSH. Duration of stimulation in any 1 cycle may be extended to up to 5 weeks. | |
| Admin | • SC administration only.<br>• In menstruating patients, treatment should start within the first 7 days of the menstrual cycle.<br>• If patient fail to response adequately after 4 weeks of treatment, that cycle should be abandoned & recommence a new treatment at a higher starting dose than in the abandoned cycle. |
| Notes | • 1 vial of 75 IU = 5.5 mcg<br>• Contains sodium <1mmol (23mg) per dose.<br>• Any unused solution must be kept at <25 $^{o}$C and discarded not later than 28 days after 1$^{st}$ opening.<br>• Store in fridge 2-8 $^{o}$C. Do not freeze. Protect from light. |

| **MEDROXYPROGESTRON ACETATE (PROVERA)** | |
|---|---|
| Prep | Tab 5mg, Inj 50mg/mL (3mL) |
| Dose: *Secondary amenorrhoea*: PO: 5-10mg daily for 5-10 days started anytime during cycle OR 2.5-10mg for 5-10 days beginning on the calculated 16$^{th}$-21$^{st}$ day of cycle. Treatment should be repeated for 3 consecutive cycles. *Abnormal bleeding due to hormonal imbalance:* PO*:* 2.5-10mg daily for 5-10 days beginning on the assumed or calculated 16$^{th}$ to 21$^{st}$ day of the cycle. Treatment should be repeated for 3 consecutive cycles. *Adjunct of cyclic oestrogen therapy*: PO: 10-20mg daily for the last 7-10 days of each cycle of oestrogen therapy. *Optimum secretory transformation:* PO: 2 tab once daily for 10 days on the 16$^{th}$ day of the cycle.*Contraception:* Deep IM into gluteal muscle:150mg every 3 months, *Endometriosis:* Deep IM into gluteal muscle:50mg once weekly or 100mg once every 2 months. PO: 10mg 3 times daily beginning on the 1$^{st}$ day of the menstrual cyle for 9 consecutive days. *Inoperable, recurrent metastatic endometrial carcinoma*: PO: 200-400mg daily; *Breast carcinoma*: PO: 500mg daily until progression of disease; *Renal cell carcinoma*: PO: 200-400mg daily | |
| Admin | ±  |
| Notes | • Store <25$^{o}$C. Protect from light.<br>• For other indications, refer to chapter L02 Endocrine Therapy |

| **OESTRADIOL VALERATE + NORGESTREL (PROGYLUTON)** | |
|---|---|
| Prep<br>Policy | Tab 2mg/500mcg<br>A*: O & G specialists , Endocrinologists and Pusat Perubatan Primer only |
| Dose:*Hormone replacement therapy for estrogen deficiency due to menopause or hypogonadism, castration or primary ovarian failure in women with intact uterus/ prevention of post-menopausal osteoporosis/ control of irregular menstrual cycles/ treatment of primary or secondary amenorrhea:* PO: (for women still menstruating): | |

| | |
|---|---|
| Starting on day 5 of cycle, 1 white tab once daily for the first 11 days followed by 1 light brown tab once daily for 10 days. Continue with 7 tab free days. Patients with amenorrhea/very infrequent periods; start anytime. | |
| Admin | ±  with some liquids |
| Notes | • Tablets are taken preferably taken at the same time everyday. |

| **TESTOSTERONE** | |
|---|---|
| Prep<br>Policy | Inj Enanthate 250mg/mL (JENASTERON), SUSTANON Inj consist of Testosterone Propionate 30mg, Phenylpropioate 60mg, Isocaproate 60mg, Decanoate 100mg in 1mL.<br>Confirmed by clinical features and biochemical tests |
| Dose: *Hypogonadism in males:* Slow IM 200-250mg every 2-3 weeks, maintenance 250mg every 3-6 weeks. If therapy starts during puberty, initial starting dose should be 100mg every 2-3weeks for 1 year. *Puberty induction in boys with delayed puberty*: Slow IM: 200-250mg per month for 3 months. If unsuccessful, repeat 2nd course with the same dosage for 3-6 months. *Failure to produce red blood cells (aplastic anemia):* 250-750mg weekly (up to 1,000mg a week), divided in 2-3 injections. *Additional therapy in advanced breast cancer in post-menopausal women:* Slow IM: 200-250mg every 7-14 days. SUSTANON®: *Testosterone replacement therapy/osteoporosis due to androgendeficiency*: Deep IM: 1mL every 3 weeks. | |
| Admin | • The injection must be administered very slowly. Care must be taken to inject deeply into the gluteal muscle. |
| Notes | • Sustanon: longer duration of action as compared to Testosterone Enanthate.<br>• Store <25 °C. Protect from light. |

| **HUMAN CHORIONIC GONADOTROPHIN (PREGNYL-G)** | |
|---|---|
| Prep<br>Policy | Inj 5000IU (1mL)<br>A*: O&G specialists and Endocrinologists only. |
| Dose: *Male hypogonadotrophic hypogonadism:* Slow IM: 500 - 1000iu 2-3 times /week. *Delayed puberty associated with insufficient gonadotropic pituatary function:* Slow IM: 1500iu 2 times/week for at least 6 months. Sterility in selected cases of deficient spermatogenesis: Slow IM/SC: 3000iu/week in combination with an HMG preparation. *Female infertility due to absence of follicle ripening or ovulation :* Slow IM: 5000-10,000 IU to induce ovulation, following treatment with HMG(human menopausal gonadotropins) preparation. Up to 3 repeat injections up to 5000 iu hCG each, may be given within the following 9 days to prevent insufficiency of the corpus luteum. *To promote controlled superovulation in medically assisted reproduction programmes*: Slow IM: 5000-10000 iu hCG 30-40 hours after the last HMG injection. *Cryptorchism not due to an anatomic obstruction:* Slow IM/SC: **Child >6yr** 1000iu ,**Child <6yr** 500iu to be given 2 times/week for 6 weeks. If necessary, this treatment can be repeated. | |
| Admin | • For IM only. After addition of the solvent provided in the carton, the reconstituted solution should be injected immediately. |
| Notes | • Store < 20°C. Protect from light. Do not store the reconstituted solution.<br>• hCG should only be administered when these criteria have been fulfilled:<br>i)at least 3 follicles >17mm in diameter are present<br>17 oestradiol levels of at least 3500pmol/L (920 picogram/mL).<br>• Oocyte collection is done 32-36 hours after hCG injection. |

## G04 UROLOGICALS

- Alpha-blockers reduce blood pressure, patients receiving antihypertensive may require reduced dosage and specialist supervision.
- Alkanization may relieve the discomfort of cystitis caused by lower urinary tract infection.
- Dutasteride and finasteride decrease serum concentration of prostate cancer markers such as prostate-specific antigen; reference values may need adjustment.

| **ALPROSTADIL (PROSTIN VR PEDIATRIC)(PGE1)** | |
|---|---|
| Prep<br>Policy | a)Inj 500mcg/mL (1mL)<br>b)Penfill (EX) 20mcg/mL, 3mL (For Endocrinologists ,Urologists and Family Medicine Specialists only) |
| Dose: a)*Maintain patency of ductusarteriosus:* IV infusion: **Child:** Initially 0.05-0.1mcg/kg/min then decreased to lowest effective dose; by reducing the dosage from 0.1 to 0.05 to 0.025 to 0.01mcg/kg/min.Max is 0.4mcg/kg/min<br>*b) Use in erectile dysfunction due to vasculogenic, psychogenic or mixed etiology:* Penfilled Intracavernosal: 1st dose 2.5mcg, 2nd dose 5mcg (partial response to 1st dose) or 7.5mcg (if no response to 1st dose), titrate dose by increments of 5-10mcg to produce erection not < 1 hr. Average dose of 2.5 to 60mcg. Of neurogenic origin (spinal cord injury) 1st dose 1.25mcg, 2nd dose 2.5mcg, then increments of 2.5-5mcg. Max dose 60mcg. Max frequency not more than once daily, not more than 3 times /week. | |
| Admin | a) Dilute 1mL (500mcg) with 25-250mL NS or D5 to get a final concentration of 2-20 mcg/mL. Discard the solution after 24hrs. Respiratory status should be monitored throughout treatment, as apnea is experienced about 10-12% of neonates with congenital heart defects with alprostadil.<br>Ampoule storage: Fridge item (2-8$^{o}$C).<br>b) Penfill is to be administered over a 5-10 second interval.<br>If a response is demonstrated, there should be a 1-day interval before next dose. |
| Notes | • Penfill is administered with Novopen (1 click = 1 unit). 5 IU= 1 mcg<br>• Store vial in fridge at temperature 2-8$^{o}$C.<br>• Penfillstorage : Store at 20-25°C.<br>• Inject by Units, Prescribe by mcg<br>• For other indications, refer chapter C01 CARDIAC THERAPY |

| **PAPAVERINE HCL** | |
|---|---|
| Prep | Inj 30mg/mL (2mL), Inj 25mg/mL (2 mL) |
| Policy | Unregistered product |
| Dose: *Relief of cerebral and peripheral ischaemia associated with arterial spasm and myocardial ischaemia complicated by arrhythmia:* IM/IV (over 1-2 mins): **Adult**: 30-120mg may be repeated every 3 hrs as necessary; **Child**: 6mg/kg daily in divided into 4 doses; *Erectyle dysfunction*: Intracavernosal over 1-2 minutes: **Adult**: Initially 30mg. May increase to 60mg. | |
| Admin | • May be given as IV or IM.<br>• Store <25$^{o}$C. Protect from light. Do not refrigerate. |
| Notes | • For erectile dysfunction, do not use more than 3 times weekly or 2 days in succession |

| **ALFUZOSIN HCL (XATRAL XL)** | |
|---|---|
| Prep | Tab 10mg XL (SR) |
| Policy | A*:Urologists& Endocrinologists only |
| Dose: *Treatment of the functional symptoms of benign prostatic hypertrophy(BPH):*PO: 10mg daily, immediately after evening meal. *Adjuvant treatment to a catheter in acute urinary retention related to BPH:*,PO: 10mg daily for 3-4 days (2-3days while the catheter is in place & 1 day after it is removed). | |
| Admin | • Swallow whole with a glass of water. Should not be crunched, chewed, split or crushed.<br>• Take immediately after evening meal  |
| Note | • Store <25$^{o}$C |

| **DUTASTERIDE 0.5MG CAP (AVODART)** | |
|---|---|
| Prep | Cap 0.5mg |
| Policy | A*:Urologist only |
| Dose: *Treatment and control of symptomatic benign prostatic hperplasia (BPH) in men w/ an enlarged prostate to improve symptoms, reduce the risk of acute urinary retention & the need for BPH - related surgery:* PO: One capsule once daily. | |
| Admin | ±  |
| Notes | • Capsules should be swallowed whole.<br>• Treatment for at least 6 months to achieve satisfactory response.<br>• Women who are pregnant or may be pregnant should NOT handle Dutasteride due to potential risk of a foetal anomaly to a male fetus. |

| **DOXAZOSIN GITS (CARDURA XL)** | |
|---|---|
| Prep | Tab 4mg |
| Policy | A*:Surgeon, Endocrinologist and Pusat Perubatan Primer |
| Dose: *Urinary outflow obstruction & symptoms associated with benign prostatic hyperplasia (BPH) , Hypertension:* PO: One capsule once daily. Can increase to 8mg once daily after 1 month when necessary. Max dose 8mg daily. | |
| Admin | ±  |
| Notes | • Capsules should be swallowed whole. For other indications, please refer Chapter C02. |

| **FLAVOXATE HCL (URISPAS-G)** | |
|---|---|
| Prep | Tab 100mg & 200mg |
| Dose: *For symptomatic relief of dysuria, urgency, nocturia, vesicalsupra-pubic pain, frequency & incontinentce as may occur in cystitis, prostatis, urethritis, urethrocyctitis and urethrogonitis(urinry tract inflammation) and bladder spasm due to cystoscopy/catheterization, sequel of surgical intervention of lower urinary tract:* PO: **Adult**:100-200mg 3-4 times; **Child >12 yo**: PO: 100-200mg 3-4 times daily. | |
| Admin | ±  |
| Note | Store below 25$^{o}$C. |

| **OXYBUTYNIN CHLORIDE (DITROPAN-G)** | |
|---|---|
| Prep | Tab 5mg |
| Policy | A*: Urologists , Paediatrics and Orthopaedic Specialists (Rehab) only |
| Dose: *For the relief of symptoms of bladder instability associated with voiding in patients with uninhibited neurogenic or reflux neurogenic bladder (eg urgency, frequency, urinary leakage, urge incontinence, dysuria)*: PO: **Adult**: 5mg 2-3 times/day. Max 4times/day. Elderly: Initially 2.5-3mg 2times/daily, increase to 5mg 2times/daily.**Child>** 5yo: 5mg 2times/day. *Nocturnal enuresis associated with overactive bladder*: PO: **Child >7-18yo:** 2.5mg-3mg 2times/daily, increase up to 5mg 2times daily (last dose before bedtime) | |
| Admin | ±  |
| Notes | • Store <25$^{o}$C. Protect from sunlight, heat & moisture, |

| **POLYCITRA SYRUP** | |
|---|---|
| Prep | Sodium citrate 1g, citric acid 668mg & potassium citrate 1.1g/10mL |
| Dose: *Oral alkalizing agent*: PO: Adults: 15-30mL four times a day; Child: 5-15mL four times a day. *Treatment of Ca and Uric Acid stones:*PO:Adults; 30-60miliequivalents per day in 3-4 doses, Dosage may need to be increased for patients with severe renal turbular acidosis or chronic diarrhea. Maximum daily dosage is 100 miliequivalents. | |
| Admin | ±  |
| Notes | • To be taken after meals & at bedtime<br>• Every 10mL contains 10mmol Na+, 10mmol K+ & 10mmol citrate<br>• For urine alkalinisation administration of 15-20 mLqid usually maintains a urinary pH of 7 to 7.6 throughout 24 hours; 10-15 mL 4x/daily usually maintains a urinary pH of 6.5 to 7.4. |

| **POTASSIUM CITRATE (Urocit-K)** | |
|---|---|
| Prep | Tab 1080mg |
| Dose: *Management of renal tubular acidosis (RTA) with calcium stones, hypocitraturic calcium oxalate nephrolithiasis of any etiology, and uric acid lithiasis with or without calcium stones.Severe hypocitraturia(<150mg/day urinary citrate):*PO:20mEq 3times/daily or 15mEq 4times/daily; *Mild-moderate hypocitraturia (>150mg/day urinary citrate) :*PO: 10mEq 3times/daily. Max 100mEq/day. | |
| Admin | After  .Limit salt intake. Encourage high fluid intake. Take with meals or within 30 minutes after meals or bedtime snack. |
| Notes | • [1080mg=K+10mmol=10mEq]<br>• Do not crush, chew or suck the tablet<br>• Store <25$^{o}$C |

| **POTASSIUM CITRATE MIXTURE** | |
|---|---|
| Prep | Potassium citrate 3g/10mL, Citric Acid Anhydrous 500mg/10mL |
| Dose: *Relief of discomfort in mild urinary tract infections*: PO: **Adult**: 10mL 3x/daily; **Child<1 yo:** 2.5mL 3x/daily; **Child 1-6 yo**: 5mL 3x/daily; **Child >6yo:** 10mL 3x/daily*; Urine alkalization*: PO: **Adult** :15-30mL 4x/daily; Children 5-15mL 4x/daily. | |

| | |
|---|---|
| Admin | ±  |
| Notes | • Not to be confused with Syrup Polycitra (EX)<br>• Per 10 mL: 28 mmol Potassium, 9.2 mmol Citrate<br>• Store <30°C. Protect from light.<br>• For other indications, refer Chapter A12 mineral Supplements |

| **SHOHL'S SOLUTION** | |
|---|---|
| Prep | Sodium citrate 1g & citric acid 668mg /10mL (EX) |
| Dose: *Oral alkalinizing agent:* PO: **Adult**: 10-30mL 4x/daily; **Child:** 5-15 mL 4x/daily | |
| Admin | After  |
| Notes | • Every 10mL contains 10mmol Na+ and 10mmol Bicarbonate , 7 mmol Citrate<br>• To be taken at bedtime |

| **SODIUM CITRATE SOLUTION** | |
|---|---|
| Prep | Sodium Citrate 0.3M/L (88.25mg/mL), 100mL |
| Dose: *Oral alkalinizing agent:* PO: 10-30mL with water at bedtime. | |
| Admin | After  |
| Notes | • Each 10mL contain ~10mmol Na+ & 3mmol citrate |

| **SOLIFENACIN SUCCINATE (VESICARE)** | |
|---|---|
| Prep<br>Policy | Tab 5mg<br>A*:Urologists & O&G specialists only |
| Dose: *Symptomatic treatment of urge incontinence and/or increase urinary frequency and urgency as may occur inpatients with overactive bladder symptoms:* PO: 5mg once daily. Max: 10mg once daily. | |
| Admin | ±  swallowed whole with liquids. |
| Notes | • Do not crush/chew/open.<br>• Swallow whole capsule.<br>• Store <30°C. |

| **TAMSULOSIN HCL + DUTASTERIDE (DUODART)** | |
|---|---|
| Prep<br>Policy | Cap 0.4mg/0.5mg<br>A*:Urologists only. Combination therapy for treatment of moderate to severe BPH symptoms. "Switching" for existing patient on Dutasteride&Tamsulosin/Alfuzosin only. |
| Dose*: Moderate to severe benign prostatic hyperplasia symptoms:* PO: Adult>21 yo: 1 cap once daily. | |
| Admin | • Take with a glass of water, up to 30 min after  |
| Notes | • Do not crush/chew/open. Swallow whole. Direct contact of capsule contents may cause oropharyngeal mucosa irritation.<br>• Dutasteride is absorbed through skin. Area in contact with leaking capsules should be washed with soap & water immediately.<br>• Leaked capsules |

| | |
|---|---|
| | • Each 0.4mg tamsulosin HCL = 0.367mg tamsulosin.<br>• Store below 30°C. |

| **TAMSULOSIN HCL (HARNAL OCAS)** | |
|---|---|
| Prep<br>Policy | Tab 0.4mg<br>A*:Urologists only |
| Dose: *Treatment of functional symptoms of benign prostatic hyperplasia:*PO: 1 tab once daily. Take the first dose at bedtime to minimize the chances of getting dizzy or fainting. After first dose, take your regularly scheduled dose 30 minutes after the same meal each day. | |
| Admin | ±  |
| Notes | • Swallow whole.Do not crush or chew as it is a prolonged release tablet.<br>• Each tablet is equivalent to 0.367mg of tamsulosin |

| **TERAZOSIN (HYTRIN-G)** | |
|---|---|
| Prep<br>Policy | Tab 1mg, 5mg<br>A:For treating benign prostate hyperplasia (BPH) only (Not for hypertension) |
| Dose:*Treatment of symptomatic BPH:*PO:Initially 1mg at bedtime, increase by doubling the dose at 1-2 weeks interval. Usual maintenance dose 5-10mg once daily. Max dose: 10mg/day. | |
| Admin | ±  |
| Notes | • Store <25°C in dry place. |

| **TOLTERODINE L-TARTRATE (DETRUSITOL)** | |
|---|---|
| Prep<br>Policy | Tab 2mg, Cap SR 4mg<br>A*:Urologists, O&G Specialists, Orthopedic Rehabs, Endocrinologists & Pediatricians only |
| Dose: *Treatment of overactive bladder with symptoms of urinary frequency, urgency and urge incontinence:* PO: 2mg 2 times/daily, reduce to 1mg 2 times/daily to minimise side effects, for liver& renal impaired patients: 1mg 2 times/daily. Cap SR 4mg once daily. | |
| Admin | ±  |
| Notes | • Capsule SR should be taken once daily with liquids & swallowed whole.<br>• 2mg tolterodine tartrate is equivalent to 1.37mg tolterodine.<br>• Store <25°C |

# CLASS H. SYSTEMIC HORMONAL PREPARATION (EXCLUDING SEX HORMONES AND INSULINS)

## H01 PITUITARY & HYPOTHALAMIC HORMONES AND ANALOGUES

**BIOSYNTHETIC HUMAN SOMATROPIN (NORDITROPIN NORDILET)**

| | |
|---|---|
| Prep | Inj 5mg (15 IU) /1.5mL (pre-filled pen) |
| Policy | (A*: Endocrinologist and Paediatricians only) |

Dose:

*Replacement therapy*: SC : **Adult** 0.1 – 0.3mg/day; increase dose monthly if required to max. 1mg (3IU)/day; use min. effective dose. Requirements may decrease with age.
*Growth hormone insufficiency:* SC : **Child** 25-35mcg/kg/day or 0.7-1mg/$m^2$/day.
*In chronic renal insufficiency (renal function <50%):* SC : **Child** 50mcg/kg/day or 1.4 mg/$m^2$/day.
*Turner syndrome* : SC : **Child** 45 – 67 mcg/kg/day or 1.3 to 2 mg/$m^2$/day.
*Born small for gestational age (SGA):* SC : **Child** 33 – 67 mcg/kg/day or 1 -2 mg/$m^2$/day.

Admin: Daily dose in the evening is recommended. Rotate injection site to prevent lipoatrophy.

Notes:

- Store unopened vials at 2 – 8°C (refrigerator). Avoid freezing. Opened vials can be kept at 2 – 8°C (max. 28 days) or ≤25 °C (max. 21 days).
- Use the conversion table below to convert dose from mg to clicks. (DOSE/CLICK = 0.0667mg). 1mg=3IU.

| Dose (mg) | Clicks | Days in use | Dose (mg) | Clicks | Days in use |
|---|---|---|---|---|---|
| 0.01 - 0.09 | 1 | 28 | 1.03 - 1.09 | 16 | 4 |
| 0.10 - 0.16 | 2 | 28 | 1.10 - 1.16 | 17 | 4 |
| 0.17 - 0.22 | 3 | 25 | 1.17 - 1.22 | 18 | 3 |
| 0.23 - 0.29 | 4 | 18 | 1.23 - 1.29 | 19 | 3 |
| 0.30 - 0.36 | 5 | 15 | 1.30 - 1.36 | 20 | 3 |
| 0.37 - 0.42 | 6 | 12 | 1.37 - 1.42 | 21 | 3 |
| 0.43 - 0.49 | 7 | 10 | 1.43 - 1.49 | 22 | 3 |
| 0.50 - 0.56 | 8 | 8 | 1.50 - 1.56 | 23 | 3 |
| 0.57 - 0.62 | 9 | 7 | 1.57 - 1.62 | 24 | 3 |
| 0.63 - 0.69 | 10 | 6 | 1.63 - 1.69 | 25 | 3 |
| 0.70 - 0.76 | 11 | 6 | 1.70 - 1.76 | 26 | 2 |
| 0.77 - 0.82 | 12 | 5 | 1.77 - 1.82 | 27 | 2 |
| 0.83 - 0.89 | 13 | 5 | 1.83 - 1.89 | 28 | 2 |
| 0.90 - 0.96 | 14 | 5 | 1.90 - 1.93 | 29 | 2 |
| 0.97 - 1.02 | 15 | 4 | | | |

**CARBETOCIN (DURATOCIN)**

| | |
|---|---|
| Prep | Inj 100mcg/mL |
| Policy | (A*: O&G Specialist only) |

Dose:

*Prevention of uterine atony and post partum hemorrhage following elective caesarian section under epidural or spinal anesthesia:* IV: 100mcg (1mL) as a single dose, ONLY when the delivery of the infants has been completed, either before or after delivery of

| | |
|---|---|
| the placenta. | |
| Admin | Slow IV bolus over 1 minute, not for infusion. |
| Notes | • Not for infusion.<br>• Should not be administered prior to the delivery of the infant for any reason, including elective or medical labour induction.<br>• Store at 2-8°C. Should not be frozen. Use immediately once ampoule is opened. |

| **DESMOPRESSIN ACETATE (MINIRIN)** | |
|---|---|
| Prep | Tab 100mcg & 200mcg, Inj 4mcg/mL, Nasal spray 10mcg/dose , 100mcg/mL ( 2.5mL) |
| Dose:<br>*Central diabetes insipidus*: PO : **Adult & child** Initially 0.1mg 3 times/day, maintenance is 0.1 – 0.2mg 3 times/day, range of 0.2 – 1.2mg/day is possible (interrupt treatment and adjust dose if signs of water retention/hyponatraemia occur). Intranasal: **Adult** 10 – 20mcg 1-2 times/day; **Child** 5-10mcg 1-2 times/day. IV: **Adult** 1-4mcg 1–2 times/day; **Child >1yo** 0.4 – 1mcg 1-2 times/day; **Child <1yo** 0.2-0.4 mcg 1–2 times/day.<br>*Primary nocturnal enuresis*: PO: **Adult <65yo & child ≥ 5yo** Initially 0.2mg at bedtime, increase up to 0.4mg if lower dose ineffective.<br>*Nocturia:* PO: Initially 0.1mg at bedtime, gradually increase to 0.2mg and then to 0.4 mg on weekly basis (enforce on fluid restriction).<br>*Renal concentrating capacity test (e.g. to differentiate diagnosis between cystitis & pyelonephritis):* Intranasal: **Adult** 40mcg; **Child>12mo** 20mcg; **Child<12mo** 10mcg. IM or SC: **Adult** 4mcg; **Child>12mo** 1-2mcg; **Child<12mo** 0.4mcg.<br>*Prevention/treatment of bleeding in minor surgery for Haemophilia A and von Willebrand's Disease (except for vWD type IIB)*: Slow IV (over 15-30 minutes): 0.3mcg/kg; can repeat 1-2 times with intervals 6-12 hours if positive effect obtained. | |
| Admin | ±  Tab can be taken with or without food.<br>*Haemophilia A and von Willebrand's Disease (except for vWD type IIB)*: Dilute dose in 50mL NS (adult & child>10kg) or 10mL NS (child<10kg). |
| Notes | • Desmopressin nasal spray should be used when oral formulation is unsuitable. Nasal spray dose is ~10% of oral dose.<br>• Use IV only when nasal spray is unsuitable e.g. poor intranasal absorption or due to surgery need (e.g. post operative period or unconscious patient). The inj. dose is ~10% of intranasal dose.<br>• Not recommended in patient ≥65yo. If given, measure serum sodium before treatment & 3 days after initiation or increase dosage.<br>• *Primary nocturnal enuresis and nocturia*: After 3 months of initiation, withdraw for at least 1 week to reassess the need to cont. treatment. Limit fluid intake to the least possible during 1 hour before and 8 hours after administration to prevent water retention and/or hyponatraemia (in serious case, convulsion). Interrupt treatment if they occur.<br>• When used for renal function testing, empty bladder at time of administration and limit fluid intake to max. 0.5L from 1 hour before until 8 hours after administration. In infant < 1yo, restrict fluid intake to 50% at the next 2 feeds to prevent fluid overload.<br>• Fluid restriction and frequent Na monitoring must be taken in concomitant treatment with NSAIDs or drugs known to induce SIADH (TCA, SSRI, chlorpromazine and carbamazepine).<br>• Interrupt treatment in acute illness (e.g. systemic infections, fever & |

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|---|---|
| | gastroenteritis) and/or electrolyte imbalance (e.g. diarrhea, vomiting).<br>• Discontinue treatment if no adequate clinical effect within 4 wks after appropriate dose titration.<br>• Inj stored at 2-8°C. Tab stored at ≤25°C. Nasal spray store in an upright position at ≤25°C and discard 6 months after initial use. |

| **GONADORELIN (RELIFACT LH-RH)** | |
|---|---|
| Prep<br>Policy | Inj gonadotrophin-releasing hormone/GnRH/Lh-Rh 100mcg (1mL)<br>Unregistered product. Require import permit |
| Dose:<br>*Assessment of hypothalamic/pituitary function in adults*: SC or IV : 100 mcg as a single injection. In female patients, give during 1st 7 days of menstrual cycle. | |
| Admin | SC or IV |
| Notes | • Reconstitution: Add accompanying sterile diluent (2% benzyl alcohol in sterile water); Use immediately or within 24 hours if stored at room temperature.<br>• Drawn venous blood samples at 15 minutes before and immediately before gonadorelin injection (baseline LH is the average of these 2 samples). Subsequent venous blood samples should be drawn at 15, 30, 45, 60, and 120 minutes after administration. |

| **OCTREOTIDE (SANDOSTATIN, SANDOSTATIN LAR)** | |
|---|---|
| Prep<br>Policy | Inj Sandostatin 0.05mg/mL (A*: Paediatric cases only) and 0.1mg/mL<br>Inj Sandostatin LAR 20mg (A*Endocrinologist only- for 6 months only) |
| Dose:<br>*Acromegaly:* SC Sandostatin: 0.05mg – 0.1mg 2 - 3 times/day. Adjust according to the assessment of monthly (or 6 monthly, if stable) GH/IGF-1 levels (see 'Notes'), clinical symptoms & on tolerability . Optimal dose: 0.3mg daily, max 1.5mg daily. If adequately controlled, may switch to *Sandostatin LAR, Deep Intragluteal Injection*: Initially 20mg every 4 week for 3 months, started on the day after the last dose of SC Sandostatin. If clinical symptoms, GH and IGF1 not fully control within this 3 months, increase dose to 30 mg 4-weekly. *If GH conc. consistently <1mcg/L, and serum IGF-1 conc. is normalized & in whom most reversible signs/symptoms have disappeared after 3 months of treatment with 20mg*: 10mg 4-weekly.<br>*Gastro-entero-pancreatic endocrine tumors*: SC Sandostatin: Initially 0.05mg 1-2 times/day, gradually increase to 0.1 to 0.2mg 3 times/day (see 'Notes'). If symptoms adequately controlled with SC Sandostatin, may switch to *Sandostatin LAR, Deep Intragluteal Injection*: Initially 20mg at 4-weeks interval. Continue SC Sandostatin at previously effective dosage for 2 weeks after the 1st Sandostatin LAR Inj. After 3 months, dose may be reduced to 10mg 4-weekly (if symptoms GH and IGF-1 are well controlled) or increased to 30mg 4-weekly (if symptoms partially controlled). | |
| Admin | Inj Sandostatin: SC injection in between meals or before bedtime.<br>Inj Sandostatin LAR: Deep intragluteal inj; never IV inj.<br>  Avoid meals around the time of SC injection may reduce GI side effects |
| Notes | • *Acromegaly*: Target GH :<2.5ng/mL , IGF-1: within normal range. Within 3 months of initiation with inj Sandostatin, if no relevant reduction in GH levels and no improvement in clinical symptoms, discontinue treatment.<br>• *Gastro-entero-pancreatic endocrine tumors*: |

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| | *1)* For those not treated with SC Sandostatin previously, start SC Sandostatin 0.1mg 3 times/day for approx. 2 weeks to assess response & tolerability before starting Sandostatin LAR as above.<br>*2)* For days when symptoms increase during treatment with Sandostatin LAR (mainly in the 1st 2months of treatment), additional administration of SC Sandostatin is recommended at the dose used prior to Sandostatin LAR treatment until therapeutic concentration of octreotide is reached.<br>*3)* If rapid response required, initial dose by IV (with ECG monitoring and after dilution to a conc. Of 10 – 50% with NaCl 0.9% inj).<br>• Protect ampoules from light.<br>• *Sandostatin*: Keep ampoules for prolonged storage at 2-8°C, for day-to-day use, store below 30°C up to 2 weeks.<br>• *Sandostatin LAR*: Store at 2-8°C, on the day of inj can be stored below 25°C, but suspension must be prepared immediately prior to inj. |

| **OXYTOCIN (SYNTOCINON-G)** | |
|---|---|
| Prep | Inj 10iu/mL (1mL) |
| Dose:<br>*Induction & augmentation of labour*: IV infusion: Initially 0.001-0.004iu/min, can gradually increase rate at intervals >20 min until max 3-4 contractions occur every 10 minutes (0.01iu/min is often adequate) up to max rate: 0.02iu/min.<br>*3rd stage of labour and puerperium (haemorrhage, subinvolution of the uterus)*: IM: 5-10iu; Slow IV inj: 5iu. *Cesarean section*: Slow IV inj: 5iu intramurally after fetus delivery. | |
| Admin | *Induction & augmentation of labour*:<br>1) For IV infusion only, not to be given via IM, SC, or IV bolus.<br>2) 10 iu oxytocin in 1000 mL infusion fluid, infuse at 0.001-0.004iu/min (0.1-0.4mL/min= 2-8drops/min). Max rate is 0.02iu/min (2mL/min= 40drops/min). If regular contraction is not achieved after infusion of 5iu oxytocin, the attempt to induce labour should be broken off and can be repeated on the following day (starting again at 0.001 – 0.004iu/min).<br>3) Careful monitoring of fetal heart rate and uterine motility essential for dose titration; discontinue immediately in uterine hyperactivity or fetal distress.<br>Infusion fluid: Administer in combination of dextrose and an electrolyte solution or in an isotonic electrolyte solution. The use of D5% is not recommended. Not compatible with solution containing bisulphites & metabisulphites as preservatives. |
| Notes | • Oxytocin should not be used where vaginal delivery is not indicated e.g. cord presentation or prolapsed, total placenta previa and vasa previa.<br>• Not to start oxytocin for 6 hours post administration of vaginal prostaglandin or at least 30 minutes following the removal of the Dinoprostone vaginal insert ( slow release delivery system).<br>• Fridge item (2-8°C) and protect from light. |

| **RECOMBINANT SOMATROPIN (GENOTROPIN)** | |
|---|---|
| Prep<br>Policy | Inj 12mg/36iu<br>(A*: Adult & Paediatric Endocrinologists) |
| Dose:<br>*Insufficient secretion of growth hormone in child:* SC : Daily dose of 0.07-0.1 IU/kg (0.025-0.035mg/kg) or 2.1-3.0 IU/$m^2$ (0.7-1.0mg/ $m^2$). *Gonadal Dysgenesis (Turner* | |

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|---|---|
| *Syndrome):* SC : Daily dose of 0.14IU/kg (0.045-0.05mg/kg) or 4.3 IU/$m^2$ (1.4mg/ $m^2$). *Short children born small for gestational age (SGA)*: 0.035mg/kg or 1.0mg/ $m^2$ until final height is reached. *Growth Hormone Deficient Adult Patients:* SC: Initially is 0.018IU/kg (0.006mg/kg) daily. Maximum is 0.036IU/kg (0.012mg/kg). | |
| Admin | SC (use only with Genotropin Pen 12mg). |
| Notes | • Fridge item (2-8°C). Protect from light.<br>• Reconstituted: 4 weeks at 2-8°C. Do not shake the solution when reconstituting as this can damage the active ingredient.<br>• Suggest to inject at bedtime as it is natural to have higher level of growth hormone at night. |

| **TERLIPRESSIN ACETATE (GLYPRESSIN)** | |
|---|---|
| Prep<br>Policy | Inj 1mg (5mL)<br>(A*: Treatment of bleeding oesophageal varices) |
| Dose:<br>*Treatment of bleeding oesophageal varices:* Slow IV over 1 minute: **Adult** Initially, 1-2mg. Maintenance dose: 1mg 4-6hourly. Max. daily dose: 120 – 150mcg/kg/day given every 4 hourly. Duration: 2-3 days. | |
| Admin | Slow IV bolus over 1 minute |
| Notes | • Reconstituted solutions should be used immediately after preparation. |

| **TETRACOSACTRIN/ TETRACOSACTIDE ACETATE (SYNACTHEN)** | |
|---|---|
| Prep<br>Policy | Inj 250mcg/ml (1mL)<br>Unregistered product. |
| Dose:<br>*Diagnostic test for adrenocorticol insufficiency (30-minute test)*: IM or IV bolus: **Adult** 250mcg as a single dose. **Child** IV: 250mcg/1.73$m^2$ BSA. **Child 5-7 yo** Half the adult dose. | |
| Admin | IV, over 2 min, diluted in NS |
| Notes | • Measure plasma cortisol concentration immediately before and exactly 30 minutes after inj. Adrenocorticol function =normal if there is increase of at least 200nmol/L (70mcg/L) of plasma cortisol concentration post-injection.<br>• Fridge item (2-8°C). Protect from light. |

| **VASOPRESSIN (PITRESSIN)** | |
|---|---|
| Prep | Inj 20 pressor unit/mL |
| Dose:<br>*Diabetes insipidus*: SC or IM: **Adult** 5 to 20 units 4 hourly. **Child** 2.5 – 5 units 6 to 8 hourly titrated to achieve the desired physiological responses. *Initial control of bleeding from esophageal varices*: IV infusion: **Adult** 20 units in 100mL glucose 5% over 15min. **Child 1 month-18 yo** Initially 0.3units/kg (up to max. 20units) over 20-30 minutes, followed by continuous infusion of 0.3 units/kg/hour. Max: 1unit/kg/hour. If bleeding stops, continue infusion at the same dose for 12 hours, then gradually withdrawn over 24-48 hours. Max. treatment duration: 72 hours. | |
| Admin | For IV Infusion: Dilute in NS or D5% to 0.2 – 1 unit/mL. |
| Notes | • Store at controlled room temperature (15 – 30°C). Protect from light. |

## 02 CORTICOSTEROIDS FOR SYSTEMIC USE

**Equivalent Anti-Inflammatory Doses of Corticosteroid**

Does not take into account the mineralcorticoid effects and variations in duration of action

Prednisolone 5mg
= Betamethasone 0.75mg
= Dexamethasone 0.75mg
= Hydrocortisone 20mg
= Methylprednisolone 4mg
= Triamcinolone 4mg

**Withdrawal of Corticosteroids**

Gradual withdrawal of systemic corticosteroids should be considered in those whose disease is unlikely to relapse and have:
- Received >40mg prednisolone (or equivalent) daily for >1 week
- Been given repeated doses in the evening
- Received treatment >3 weeks
- Recently received repeated courses (particularly if taken >3weeks)
- Taken a short course within 1 year of stopping long term-therapy
- Other possible causes of adrenal suppression

**Psychiatric Reactions**

- Systemic corticosteroids, especially in high doses, are linked to psychiatric reactions (e.g. euphoria, night-mares, insomnia, irritability, mood lability, suicidal thoughts, psychotic reactions and behavioral disturbances).The reactions also rarely occur during withdrawal of corticosteroid treatment.
- These reactions frequently subside on reducing the dose or discontinuation, but they may also require specific management.
- Advice patients to seek medical advice if reactions occur (especially depression and suicidal thoughts).

**Patient Counseling**

Advice patients on systemic corticosteroids to consult doctor promptly if they come into close contact with anyone with chickenpox or measles, or if they become ill or if psychological changes occur (as stated above).

Patient steroid information leaflets and counseling service are available from Pharmacy Department.

| **DEXAMETHASONE** | |
|---|---|
| Prep | Tab 0.5mg, 4mg; Inj (as sodium phosphate) 4mg/mL (2mL); Elixir 0.5mg/5mL (60mL) |

Dose:

1. *Suppression of inflammatory, allergic, and rheumatic disorder:* PO : **Adult** 0.5 – 10 mg daily. **Child (1 month – 18 yo)** 0.01 – 0.1mg/kg daily in 1 – 2 divided dose, adjusted according to response; up to 0.3mg/kg daily maybe required in emergency situations. IM/Slow IV/ IV infusion: **Adult** 0.4 – 20mg daily depending in the disease treated. **Child** 0.2 – 0.4 mg/kg daily.
2. *Shock: IV bolus*: 2-6 mg/kg bolus, repeated PRN after 2-6 hours (treatment no longer than 48 – 72 hours).
3. *Cerebral oedema associated with malignancy*: IV: 10mg, followed by IM : 4mg every 6 hours as required for 2-4 days, then gradually reduced & stopped over 5 - 7 days (Refer PIL for acute life –threatening cerebral oedema dosing regime).
4. *Neonatal respiratory distress syndrome (antenatal prophylaxis)*: IM : (**To mother**) 5mg every 12 hours up to 4 doses, initiated between 24 hours and 7 days before the

estimated delivery.

5. *Prevention of acute nausea and vomiting (cancer chemotherapy induced)*: PO : 4-8mg immediately before moderate emetogenic chemotherapy or IV : 20mg (before severe emetogenic chemotherapy, combined with a 5-$HT_3$ antagonist); followed by PO : 8mg every 12 hours for 2 -4 days after chemotherapy.
6. *Adjunct to bacterial meningitis (starting before OR with 1st dose of antibacterial treatment)[Unlicensed use]* : IV: **Adult** 10mg every 6 hours for 4 days. **Child (3 months – 18 yo)** 0.15/kg (max. 10mg) every 6 hours for 4 days.
7. *Cushing's Syndrome, diagnostic (low-dose test)*: PO : 1 mg ORALLY at 11 pm; draw blood for plasma cortisol at 8 am the following morning; OR 0.5 mg ORALLY every 6 hours for 48 hours with 24-hour urine collections for determination of 17-hydroxycorticosteroid excretion.
8. *Adjunctive treatment for tuberculosis of meninges (used concurrently with anti-TB therapy)* : PO: 0.75 – 9mg/day depending on the disease being treated.

| Admin | Inj can be given directly from the vial or mix with NS/D5% (for IV<br>IV infusion: 0-50mg into 50ml (infused within 30 minutes); 51-100mg into 100ml infuse as directed. Use within 24 hours of mixing when stored at room temperature (27°C).<br>The infusion solution must be preservative-free when used in neonate. |
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**FLUDROCORTISONE ACETATE (FLORINEF)**

| Prep | Tab 100mcg |
|---|---|

Dose:

*Mineral corticosteroid replacement in adrenocortical insufficiency (e.g. Addison's disease)*: PO: **Adult** : 50-300 mcg once a day in the morning. **Child 1 mo – 18 yo** Initially 50 -100 mcg once daily; maintenance 50- 300 mcg once daily. **Neonate** initially 50mcg once daily, adjusted according to response; usually 50 – 200mcg daily. *Congenital adrenal hyperplasia (salt-losing form)*: PO: **Adult** 100 – 200 mg only**. Infant/Child** : PO: 0.05mg or 0.018

| Admin | Swallow tablets in the morning with a glass of water. |
|---|---|
| Notes | • To be kept refrigerated at 2-8°C and protect from moisture.<br>• Usually given with Hydrocortisone 20 – 30 mg daily for Addison's disease.<br>• Dose for neonate and pediatric is determined more by the severity of condition and response of the patient than by the age or body weight (min 25mg/day). |

**HYDROCORTISONE**

| Prep | Tab 10mg; Inj (as sodium succinate) 100mg |
|---|---|

Dose:

1. *Suppression of inflammation and allergic* disorder: IM, slow IV, IV infusion: **Adult** 100-500mg; may be repeated every 2, 4 or 6 hourly. Slow IV inj **Child** 25mg 3 times/day (up to 1 year); 50mg 3 times/day (1 – 5 yo); 100mg 3 times/day (6 – 12 yo); 200mg 3 times/day (12 – 18 yo).
2. *Acute severe asthma:* IV: 100mg 6 hourly until conversion to oral prednisolone is possible.
3. *Substitution therapy*: PO: **Adult** 20-30mg/day as 2/3 dose in the morning (can be taken in two portions if necessary) and 1/3 dose early in the evening.
4. *Other indication*: 40 – 200mg/day (short term use for higher dose for special indication). In stress situations e.g. trauma, infections or surgery, dose must be increased 2-4 fold and must be transferred to parenteral therapy if necessary.

5. *Adrenocorticol insufficiency (Addisonian crisis):* PO: **Child** 7.5 – 15mg/$m^2$/day in 3 equally divided dose (immediately in the morning, in the afternoon and late in the evening). Morning dose can be higher than the other doses. Slow IV : **Neonates** Initially 10mg, then IV infusion 100mg/$m^2$ daily or in divided dose every 6 – 8 hours; when stable reduce over 4 – 5 days to oral maintenance dose. **Child 1 month – 12 yo** Initially 2-4mg/kg; then 2-4 mg/kg every 6 hours; when stable reduce over 4-5days to oral maintenance dose. **Child 12 – 18 yo** 100mg every 6 – 8 hourly.
6. Congenital *adrenal hyperplasia*: PO: **Child** 10mg/$m^2$/day in 3 divided dose.
7. *Hypopituitarism:* PO: **Child** 2.5mg every 8 hours.

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| Admin | Reconstitution: Add 2mL WFI or NS to 1 vial. Infuse over 30 secs to 10 minutes (e.g. ≥500mg).<br>Slow IV infusion over 30 minutes: Add reconstituted product to 100 – 1000mL of D5% or NS (0.1 – 1mg/mL. (For fluid restricted patient, up to 60mg/mL in 50mL. |
| Notes | IV inj is preferred method for initial emergency use.<br>Reconstituted product should be kept at room temperature and protect from light. |

| **METHYLPREDNISOLONE SODIUM SUCCINATE (SOLU-MEDROL)** | |
|---|---|
| Prep | Inj 0.5g (8mL), 1g (16mL) |
| Dose:<br>1) *General dosing*: IV : Initially 10 – 500mg.<br>2) *Graft rejection*: IV infusion : up to 1g daily for up to 3 days.<br>3) *Adjunctive therapy in life threatening conditions*: IV: 30mg/kg, infuse over at least 30 minutes every 4-6 hours up to for 48 hours, depending on clinical necessity.<br>4) *Prevention of acute nausea and vomiting (cancer chemotherapy induced)*: IV over at least 5 minutes: 250mg 1 hour before chemotherapy, at the initiation of the chemotherapy, and at the time of discharge.<br>5) *Acute spinal cord injury*: IV bolus : 30mg/kg over 15 minutes under medical supervision; start within 8 hours of injury. After the bolus injection, pause for 45 min, followed by a continuous infusion of 5.4 mg/kg/hour for 23 hours.<br>6) *Pulse therapy for glomerulonephritis, lupus nephritis* : IV : 50 – 250 mg daily for 3 days (ref: Nephrology unit, PPUKM). | |
| Admin | Reconstitute: Reconstitute with the accompanying diluents to 500mg/8mL or 1g/16mL. Use within 48 hours if stored between 20 – 25 °C.<br>Dilution: Use NS or D5%. Dose 60-100mg in 50mL diluents; Dose 101 – 500mg in 100mL diluents; Dose 501–1250mg in 250mL diluents. Once diluted, use within 48 hours.<br>Administration: ≤125mg/dose: IV push over 3 – 15 minutes; 250mg/dose: IV over 15 – 30 minutes; ≥500mg/dose : IV over ≥ 30 minutes; ≥ 1g/dose: IV over 1 hour. |
| Notes | • Bolus dose >500mg over <10 min can cause arrhythmias, circulatory collapse and cardiac arrest.<br>• For infants & children should not be < 0.5mg/kg every 24 hours.<br>• To avoid compatibility & stability problem, administer methylprednisolone separately from other drugs as either IV push, through IV medication chamber or as an IV piggy back solution. |
| **PREDNISOLONE** | |
| Prep | Tab 5mg; Syrup 2.5mg/5mL (100mL) |

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| Dose:<br>*Suppression of inflammation and allergic* disorder: PO : **Adult** 5 to 60mg a day as a single dose or in divided dose (every 6 to 12 hours)up to 250mg daily. **Child** 0.5 – 2mg/kg or 15 - 60 mg/m$^2$ daily in 3 divided dose. *Adrenal insufficiency:* PO :**Child** 0.14 mg/kg or 4 mg/m$^2$ daily in 3 divided dose. |

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|---|---|
| Admin | Take immediately after meals, preferably in the morning after breakfast. |
| Notes | • Dose for pediatric is determined more by the severity of condition and response of the patient than by the age or body weight.<br>• Long term use can lead to Cushingoid's syndrome. |

| **TRIAMCINOLONE ACETONIDE** | |
|---|---|
| Prep | Inj 40 mg/mL |
| Dose:<br>*Suppression of inflammatory and allergic disorder* : Deep IM into gluteal muscle: **Adults and child>12yo** Initially 60mg, usual maintenance dose is 40 - 80mg. **Child 6-12 yo** Initially 40mg, dose depends on severity of symptoms rather than on age/weight. Intra-articular, intrabursal & inj into tendon sheaths/ganglia : dose depends on symptoms severity and size of the affected area. **Adult** up to 10mg for smaller areas and up to 40mg for larger areas. Single injections into several joints for multiple locus involvement up to 80mg have been given without undue reactions. | |
| Admin | Shake vial before use to ensure uniformed suspension.<br>Do not give as IV as it is a suspension. |
| Notes | • Avoid use in children <2 yo as it contains benzyl alcohol. Not to be used in neonates.<br>• Intra-articular corticosteroid inj can cause flushing and may affect the hyaline cartilage. Each joint should not be treated > 4 times/year. |

## H03 THYROID THERAPY

| **CARBIMAZOLE (NEOMERCAZOLE-G)** | |
|---|---|
| Prep | Tab 5mg |
| Dose:<br>*Treatment of thyrotoxicosis* : PO : **Adult** Initially 10 – 60mg daily at 8 hour intervals, maintenance 5 to 20mg daily (therapy usually for 12 – 18 months). **Child 1-6yo** Initially 7.5mg daily in divided dose. **Child above 6yo** Initially 15mg daily in divided dose.<br>*Blocking-replacement regimen:* PO : 40 – 60 mg daily (together with levothyroxine 50 – 150 mcg daily). | |
| Admin | ± |
| Notes | • Preparation of thyrotoxic surgery: Give carbimazole in sufficient dosage to render the patient euthyroid and continue treatment until the time of operation. Iodine should be prescribed together during the last 2 weeks.<br>• The blocking-replacement regimen is not suitable during pregnancy.<br>• During first 3 months treatment, Carbimazole-induced neutropenia and agranulocytosis may occur (can be fatal).<br>• Warn patient to immediately report to doctor if symptoms of suggestive infections occur e.g. sore throat, fever, and mouth ulcer, bruising signs and symptoms of hepatic disorder disorder (pain in the upper abdomen, anorexia and general pruritus). Rashes and pruritus are common and can |

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| | be treated with antihistamine without discontinuing therapy. |

| **LEVOTHYROXINE SODIUM (EUTHYROX)** | |
|---|---|
| Prep | Tab 25mcg, 50 mcg, 100 mcg, Syrup (EX) 25mcg/mL |
| Dose:<br>*Substitution therapy in hypothyroidsm* : PO : **Adult** Initially 25 – 50 mcg, maintenance dose is 100 – 200 mcg. **Child** Initially 12.5mcg – 50mcg, maintenance dose is 100 – 150mcg/m2.<br>*Congenital hypothyroidism* **: Neonate and infants (0 to 12 mo)** Initially 10 – 15mcg/kg daily for the first 3 months, dose thereafter should be adjusted accordingly to the clinical findings, thyroid hormone and TSH values.<br>*Suppression therapy in thyroid cancer:* PO : 150 mcg – 300 mcg daily<br>*Treatment of benign euthyroid goiter and prophylaxis of relapse after surgery for euthyroid goiter* : PO: 75mcg – 200 mcg daily.<br>*Concomitant supplementation during anti-thyroid drug treatment of hyperthyroidism* : PO : 50 -100mcg daily.<br>*In elderly >50 yo, in patients with coronary heart disease and in patients with severe or long existing hypothyroidism* : PO : Start with caution in low dose (e.g. 12.5mcg daily and increased slowly with the increment of 12.5mcg every 2 weeks with frequent monitoring of thyroid hormones. | |
| Admin |  s a single dose in the morning on an empty stomach, preferably ½ our before breakfast with half glass of water. For infants, give at least 30 minutes before the first meal fo the day.<br>Best to take 2 hours prior to intake of antacids, sucralfate, iron and calcium carbonate. |
| Notes | • Protect from light.<br>• Syrup to be prepared freshly (refer extemporaneous file). |

| **LUGOL'S SOLUTION 5% (IODINE 5% AND POTASSIUM IODIDE 10% W/V)** | |
|---|---|
| Prep | Iodine 0.05mg/mL, Potassium Iodide 0.1mg/mL (total iodine: 130mg/mL) |
| Dose:<br>*Thyrotoxicosis (preoperative)*: PO: 0.1 - 0.3mL every 8 hourly for 10 -14 days before partial thyroidectomy. *Neonatal thyrotoxicosis:* PO : **Neonate** 0.05mL – 0.1mL 3 times/day. *Thyrotoxic crisis* : PO : **Child 1mo – 1yo** 0.2 – 0.3mL 3times/day. | |
| Admin |  |
| Notes | • 1 drop = 0.05mL.<br>• Should be given well diluted in milk or water to avoid gastric irritation.<br>• Oral Potassium Iodide may also be given 1 hour after an antithyroid drug. |

| **METHIMAZOLE (TIMAZOL)** | |
|---|---|
| Prep | Tab 5mg |
| Dose:<br>*Treatment of hyperthyroidism*: PO: **Adult** 15 mg (mild); 30 to 40 mg (moderately severe); 60 mg (severe) per day in 3 divided doses (every 8 hours). Maintenance dose is 5 – 15 mg daily.<br>**Child** Initially is 0.4mg/kg daily in 3 divided doses. Maintenance dose is half of the initial dose. | |

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|---|---|
| Admin |  |
| Notes | • Contraindicated in lactation.<br>• Can induce agranulocytosis, thrombocytopenia, pancytopenia, hepatitis, exfoliative dermatitis, hypoprothrombinemia, bleeding. Monitor prothrombin time and thyroid function.<br>• Contact physician immediately if any signs or symptoms of illness occur particularly sore throat, skin eruptions, fever, chills or headache. |

| **PROPYLTHIOURACIL** | |
|---|---|
| Prep | Tab 50mg |
| Dose:<br>*Treatment of hyperthyroidism*: PO : **Adult** Initially between 300 – 600mg daily in 3 divided doses (every 8 hours) until patient becomes euthyroid (within 1-2 months). Then gradually reduce to maintenance dose which is 50 -150mg daily (at least 12 – 18 months). **Neonate** : Initially 2.5 – 5mg/kg 2 times/day until euthyroid then adjust as necessary. **Child** Initially 2.5 mg/kg 3 times/day (**child 1 mo – 1yo**) or 25mg 3 times/day (**child 1 – 5yo** ). Or 50 – 150 mg (**6-10yo**) or 150 – 300mg **(>10yo**) in 3 divided dose daily (should only be used if children is allergy to or intolerant to other alternatives). | |
| Admin |  |
| Notes | • SE: Severe liver injury and acute liver failure. Monitor closely for signs and symptoms of liver injury (e.g. fatigue, vague abdominal pain, itching, yellowing of the eyes and skin) esp in the first 6 months of therapy. Discontinue if occur.<br>• Should be reserved for patients who cannot tolerate carbimazole/methimazole and in whom radioactive iodine therapy or surgery are not appropriate treatment for hyperthyroidism. |

## 04 PANCREATIC HORMONES

| **GLUCAGON HYDROCHLORIDE (GLUCAGEN)** | |
|---|---|
| Prep | Inj 1mg (1mL) |
| Dose:<br>*Treatment of severe hypoglycaemia*: SC/IM/IV: **Adult** 1 mg. **Child >25kg or >8yo** 1mg. **Child <25kg or < 6-8 yo** 0.5mg. If no response within 10 minutes, IV glucose should be given. | |
| Admin | SC /IM/IV.<br>Reconstitute with diluent supplied to conc. 1mg/mL. |
| Notes | • For emergency use only, not appropriate in chronic hypoglycaemia.<br>• To prevent relapse of hypoglycaemia, oral carbohydrate should be given to restore liver glycogen once patient responded to the treatment.<br>• Keep the non-reconstituted vials at 2-8$^{o}$C and protect from light.<br>• Use the reconstituted solution immediately and discard unused portion. |

## H05 CALCIUM HOMEOSTASIS

| **PARICALCITOL (ZEMPLAR)** |
|---|

| | |
|---|---|
| Prep Policy | Cap 1 mcg, 2mcg (Both A*: Nephrologist only. Preventing and treating high levels of parathyroid hormone in the blood due to long-term kidney disease).<br>Inj 5ug/mL, 1mL (A*: Nephrologist only. For prevention and treatment of secondary hyperparathyroidism in patients with chronic renal failure undergoing hemodialysis. For 10 patients per year). |
| Dose:<br>*CKD Stage 3 & 4:* PO: If baseline intact parathyroid hormone (iPTH) levels is <500pg/mL, the initial dose is 1mcg daily or 2 mcg 3 times/week. If baseline is >500pg/mL, the initial dose is 2mcg daily or 4mcg 3 times/week.<br>*CKD Stage 5:* PO: Initial dose (in mcg) is baseline iPTH level (pg/mL)/60 or (pmol/L)/7, administered 3 times /week every other day. Maximum initial dose is 32mcg. IV bolus: Initial dose (in mcg) is iPTH (pg/mL)/80 3 times/week, dose may be increased by 2 – 4 mcg at 2 -4 weekly. Max. dose is 40mcg. If iPTH levels decrease <150pg/mL, reduce the dose. | |
| Admin | ±  The 3 times /week dose should be administered no > frequently Than every other day and the average dose is similar to the daily dose.<br>IV Paricalcitol: Via central line during haemodialysis (HD). If no HD access, give slow IV NOT <30 seconds to minimize pain. |
| Notes | • IV Paricalcitol: Do not store >30$^{o}$C. Discard any unused solution immediately after use. Avoid administration with heparin.<br>• Monitor serum or plasma iPTH level, serum Ca and serum phosphorus monitoring at 2-4 weeks interval for 3 months after initiation or dose adjustment of paricalcitol, then monthly for 3 months and every 3 months thereafter.<br>• If clinically significant hypercalcaemia occur, reduce paricalcitol dose or interrupt therapy immediately and withdraw Ca supplement.<br>• Patient should take adequate amount of calcium (nutritionally or by supplement) while treated with Paricalcitol. |

# CLASS J. ANTI-INFECTIVES FOR SYSTEMIC USE

Please also refer to ***PPUKM Anti-infective Guideline, 2012*** and ***PPUKM Handbook of Renal Dose Adjustment for Common Antimicrobials, 2013***.

## J01A TETRACYCLINES

- **Drug interactions**: Milk, antacid, $Ca^{2+}$, $Fe^{2+}$ & $Mg^{2+}$ salts – reduce absorption of tetracyclines (except for doxycycline).
- **S/E:** Deposited in growing bone/teeth, may cause staining and occasionally dental hypoplasia, do not give to children under 12 yo or to pregnant/ breast-feeding women.

| **DOXYCYCLINE (VIBRAMYCIN -G)** | |
|---|---|
| Prep | Cap 100mg |
| Dose:<br>*General:* 200mg on 1st day then 100 - 200mg/day. *Acne Vulgaris*: 50-100mg every 24hrs, up to 12 wks. *Scrub typhus, Leptospirosis*: 100mg every 12hrs. | |
| Admin |  Capsules should be swallowed whole with plenty of fluid, with meals or milk. |
| Notes | • Time-dependent killing.<br>• Risk of esophageal irritation and ulceration if not taken with adequate fluid. |

| **TIGECYCLINE (TYGACIL)** | |
|---|---|
| Prep<br>Policy | Inj 50mg<br>A*: Intensive care units only. Only use if 1) after confirmation by Culture & Sensitivity results/ recommendation by Infectious Disease specialist or microbiologist; 2) for polymicrobial infection (not for just MRSA); 3) as a 3rd line antibiotic. |
| Dose:<br>*Complicated skin and skin structure infections, complicated intra-abdominal infections:*<br>IV infusion: Initial dose of 100mg, followed by 50mg every 12hrs. | |
| Admin | Reconstitute with 5.3mL NS/ D5%, then further dilute to 100mL. Infuse over 30-60mins. Max conc. for infusion 1mg/mL. |
| Notes | • Time-dependent killing.<br>• Poor serum concentrations hence should not be used for *endovascular infections*, such as *bacteraemia* or *endocarditis*. Not for *HAP* or *VAP*.<br>• Dose adjustment in liver impairment.<br>• Contains lactose.<br>• Reconstituted vial may be stored at room temperature for up to 24hrs (i.e. up to 6hrs in the vial & remaining time in IV bag).<br>• Diluted solutions may be stored at 2-8°c for up to 48hrs. |

## J01B AMPHENICOLS

| **CHLORAMPHENICOL SODIUM SUCCINATE** | |
|---|---|
| Prep | Inj 1g, Cap 250mg |
| Dose:<br>PO/IV/IV infusion: *General*: **Adult & Child** over 1mth: 12.5-25mg/kg every 6hrs, high doses used in severe infections & should reduced as soon as clinically indicated; **Neonate** <2wk: 12.5mg/kg every 12hrs; 2wks-1mth: 12.5mg/kg every 6-12hrs. *Scrub typhus, Typhoid Fever*: **Adult** 500mg every 6hrs. | |
| Admin | Reconstitute with 10mL WFI.<br>Slow IV: Max 100mg/mL over 5mins; IV infusion: further dilute with WFI/D5%, max 20mg/mL over 30-60mins. |
| Notes | • Chloramphenicol is a potent, potentially toxic, broad-spectrum antibiotic.<br>• S/E: May cause bone marrow depression (rarely idiosyncratic marrow aplasia that may be fatal and dose related suppression reversible on stopping). Monitor blood counts regularly.<br>• For other indications, refer to chapter ***S01 Opthalmologicals***. |

## J01C BETA-LACTAM ANTIBACTERIAL, PENICILLINS

- Time-dependent bacterial killing.
- Large doses esp. **benzylpenicillin** may cause electrolyte disturbances due to excess sodium.

| **AMOXICILLIN/ AMOXYCILLIN** | |
|---|---|
| Prep | Cap 250mg |
| Dose:<br>*General*: **Adult & Child** ≥20kg: 250-500mg every 8hrs.<br>*Helicobacter pylori*: **Adult** 1g every 12hrs**.** | |
| Admin | ±  |
| Notes | • Need dose adjustment in renal impairment. |

| **AMOXICILLIN/AMOXYCILLIN & CLAVULANATE (AUGMENTIN)** | |
|---|---|
| Prep | Inj 500mg Amoxicillin/100mg Clavulanate (600mg) & 1g Amoxicillin/200mg Clavulanate (1.2g), Tab 500mg Amoxicillin/125mg Clavulanate (625mg), Syrup 200mg Amoxicillin/28.5mg Clavulanate per 5mL (228mg/5mL) (70mL) |
| Dose:<br>PO: *General*: **Adult & Child** >12yo: 1-2 tab every 12hrs; Syrup: **Child** 2-6yo (13-21kg): 5-10mL every 12hrs; 7-12yo (22-40kg): 10-20mL every 12hrs.<br>IV: *General*: **Adult & Child** >12yo: 1.2g every 6-8hrs; **Child** 3mth-12yo: 30mg/kg* every 6-8hrs; 1mth - <3mth: 30mg/kg* every 8hrs. *Surgical prophylaxis*: **Adult** 1.2g at induction of anaesthesia, may require up to 4 doses in 24hrs for operation with high risk of infection. | |
| Admin | ±  <br>IV: Reconstitute with 20mL WFI. Slow IV: over 3-4mins; IV infusion: further dilute up to 100mL NS/WFI, infuse over 30-40mins. |

| | |
|---|---|
| Notes | • ***Each 30mg **AUGMENTIN** contains 25mg Amoxicillin/5mg Clavulanate.<br>• Need dose adjustment in renal impairment.<br>• Some brands require oral tablet dose to be taken 3 times/day; please check with pharmacy for latest info.<br>• **Electrolytes** 600mg vial contains $K^+$ 0.5mmol, $Na^+$ 1.35mmol & 1.2g vial contains $K^+$ 1mmol, $Na^+$ 2.7mmol. |

| **AMPICILLIN** | |
|---|---|
| Prep | Inj 500mg, Susp 125mg/5mL (Trihydrate) (60mL) |
| Dose:<br>*General*: **Child** under 10yo: PO: 125-500mg every 6hrs.<br>*Endocarditis, Listerial meningitis (in combination)*: IV infusion: **Adult** 2g every 4hrs, **Child** 1mth-18yo: 50mg/kg every 6hrs (max 2g every 4hrs). *Chorioamnionitis/ Septic miscarriage/ Endomyometritis (in combination)*: IV infusion: **Adult** 2g every 6hrs. *Neonatal gp B streptococcal disease prophylaxis (during labour)*: IV: **Adult** 2g stat, then 1g every 4hrs until delivery; refer to ***PPUKM Anti-infective Guideline, 2012*** for further info. | |
| Admin | 30 mins before  <br>IM: Reconstitute 500mg with 1.8mL, 1g with 3.5mL WFI.<br>IV/IV infusion: Reconstitute 500mg with 5mL, 1g with 7.4mL WFI; Infusion conc. 10-20mg/mL, max 30mg/mL; Infuse over 10-15mins (1g), 20-30mins (2g). After reconstitution, administer immediately as potency is retained for 1hr only. |
| Notes | • Need dose adjustment in renal impairment.<br>• Use TBW for weight based dosing.<br>• **Electrolytes** $Na^+$ 1.25mmol in 500mg vial. |

| **AMPICILLIN & SULBACTAM (UNASYN /-G)** | |
|---|---|
| Prep | Inj 1g Ampicillin/0.5g Sulbactam (1.5g), Tab 375mg (Sultamicillin), Susp 250mg (Sultamicillin)/5mL |
| Dose:<br>IM/IV: **Adult & Child** >40kg: 1.5-3g every 6-8hrs, max. 12g/day*; **Child** >1yr and <40kg: 75mg/kg every 6hrs; **Infant/Neonate** 150mg/kg/day in 3-4 divided doses (2 divided doses in neonate<1wk).<br>PO: **Adult & Child** >30kg: 375-750mg every 12hrs; <30kg: 12.5-25mg/kg every 12hrs. | |
| Admin | IM: Reconstitute 1.5g with 3mL WFI.<br>IV: Reconstitute with 5mL WFI, further dilute to minimum 35mL of WFI/NS or with minimum 50mL of D5%.<br>IV slow bolus: 10-15 mins; IV infusion: 15-30 mins. |
| Notes | • Need dose adjustment in renal impairment.<br>• Reconstituted solution is stable for 8hrs at 25°C and 72hrs at 4°C.<br>• Each 1.5g vial contains 115mg (5mmol) $Na^+$.<br>• *Higher doses may be used for multi-drug resistant *Acinetobacter* in adult. |

| **BACAMPICILLIN (PENGLOBE)** | |
|---|---|
| Prep | Tab 400mg |
| Dose:<br>*Infection of the lower respiratory tract*: **Adult** 400mg every 12hrs; **Children up to 25kg** 16mg/kg every 12hrs.<br>*Infection of the skin, soft tissue and upper respiratory tract*: **Adult** 400-800mg every 12hrs; **Child** up to 25kg: 8-16mg/kg every 12hrs.<br>*Severe infections*: **Child** >5yo: 200mg every 8hrs. | |

| **BENZATHINE BENZYLPENICILLIN (RETARPEN)** | |
|---|---|
| Prep | Inj 2.4Mega units (1.8g) |
| Dose:<br>*To prevent recurrence of acute rheumatic fever, rheumatic endocarditis, poststreptococcal glomerulonephritis and Erysipela*: IM: 1.2-2.4MU at intervals of 4wks.<br>*Primary & Secondary syphilis*: IM: 2.4MU wkly for 2wks, repeat if clinical symptoms recur or lab test persistently positive.<br>*Late (tertiary, sero+ve) syphilis*: IM: 2.4MU wkly for 3wks. | |
| Admin | For deep IM only.<br>Reconstitute 2.4Mega units with 5mL WFI, shake vigorously for 20secs then syringe out with needle of at least 0.9mm size. |
| Notes | • **Electrolyte** $Na^+$ 2mmol/g. |

| **BENZYLPENICILLIN/ PENICILLIN G** | |
|---|---|
| Prep | Inj 1 Mega units (0.6g) & 5 Mega units (3g) |
| Dose:<br>IM/IV/IV infusion: *General*: 1-5MU (0.6-3g) every 4-6hrs. *Endocarditis*: 3MU (1.8g) every 4hrs. *Leptospirosis*: 1.5MU every 6hrs. *Acute Meningitis (aseptic)*: 5MU (3g) every 4hrs. *CSF gram +ve/ Brain abscess/ "Gas Gangrene"/ Necrotizing fascitis/ Toxic Shock Syndrome*: 4MU (2.4g) every 4hrs.<br>**Neonate** refer to ***NICU preprinted order sheet***. | |
| Admin | Reconstitute with 2mL WFI for 1MU vial, 8mL for 5MU vial.<br>Slow IV: Dilute further with WFI to final conc 0.1MU(60mg/mL).<br>IV infusion: Dilute up to 100mL WFI, infuse over 30-60mins. |
| Notes | • Need dose adjustment in renal impairment.<br>• **Electrolyte** $Na^+$ 1.68mmol/0.6g. |

| **CLOXACILLIN** | |
|---|---|
| Prep | Inj 250mg & 500mg, Cap 250mg, Syrup 125mg/5mL (60mL) |
| Dose:<br>IM: *General*: 250mg every 4-6hrs.<br>IV: **Adult** *Bacteraemia*: 2g every 4hrs. *Endocarditis/ Toxic Shock syndrome/Post-surgical or trauma brain abscess/VP shunt*: 2g every 4hrs. *Diabetic foot ulcer*: 1g every 6hrs. *Osteomyelitis /IV line infxn*: IV: 2g every 6hrs. *General*: **Child** up to 2yo: ¼ adult dose; 2-10yo: ½ adult dose.<br>PO: *General*: **Adult** 250-500mg every 6hrs; **Child** 2-10yo: 125-250mg every 6hrs; up to 2yo: 62.5-125mg every 6hrs. *Mild Cellulitis*: **Adult** 500mg every 6hrs. | |
| Admin | IM: Reconstitute with 1.5mL WFI in 250mg vial or 2.5mL in 500mg.<br>Intermittent Infusion: 1-2 gram in 100-250mL over 60 min |

| | |
|---|---|
| | Continuous Infusion: 1-2 gram in 500mL over 6-12 hrs<br>Slow IV: Reconstitute with 5mL WFI to 250mg vial or 10mL to 500mg vial, and inject over 3-4mins. (recommended for central line only) |
| Notes | • No adjustment in renal impairment.<br>• **Electrolyte** $Na^+$ 2mmol/g in the injection preparations. |

| **FLUCLOXACILLIN** |
|---|
| Prep: Cap 250mg, Susp 125mg/5mL (60mL) |
| Dose:<br>*General*: **Adult** 250-500mg every 6hrs; **Child** <2yo: 62.5-125mg every 6hrs; 2-10yo: 125-250mg every 6 hrs. |
| Admin: 30 mins before  |

| **PHENOXYMETHYLPENICILLIN/ PENICILLIN V** |
|---|
| Prep: Tab 125mg &250mg, Syrup 125mg/5mL (60mL) |
| Dose:<br>*General*: **Adult** 250-500mg every 4-6hrs, up to 1g every 6hrs in severe infection; **Child** up to 1yo: 62.5mg every 6hrs; 1-5yo: 125mg every 6hrs; 6-12yo: 250mg every 6hrs; increased up to 12.5mg/kg every 6hrs in severe infection.<br>*Post splenectomy*: **Adult & Child** over 5yo: 250mg every 12hrs; 1-5yo: 125mg every 12hrs; <1yo: 62.5mg every 12hrs.<br>*Prevention of recurrence of rheumatic fever*: **Adult** 250mg every 12hrs. |
| Admin: 30 mins before  |
| Notes: • Antibiotic prophylaxis in asplenia should continued for at least 2yrs post splenectomy or up to 16yo. Lifelong not recommended. |

| **PIPERACILLIN & TAZOBACTAM (TAZOCIN-G)** |
|---|
| Prep: Inj 4g Piperacillin/ 0.5g Tazobactam (4.5g)<br>Policy: JKTU-A*: As second line therapy when standard treatment has failed. |
| Dose:<br>IV bolus/ IV infusion: *General*: 4.5g every 8hrs. *Nosocomial Pneumonia/ Pseudomonas infection/ Neutropenia*: 4.5g every 6hrs. |
| Admin: Reconstitute each vial with 20mL WFI/NS. Swirl until dissolved and becomes clear & colourless solution.<br>IV bolus: Infuse over 3-5mns. IV infusion: Further dilute in 50 to 150mL WFI/NS/D5%, infuse over 30mins. |
| Notes: • Need dose adjustment in renal impairment.<br>• In severe Infection caused by intermediate to resistant gram negative pathogens, may prolong infusion over 4hrs.<br>• **Electrolyte** $Na^+$ 9.37mmol in each vial. |

## J01D OTHER BETA-LACTAM ANTIBACTERIAL

- 10% of patients with hypersensitivity to penicillin will also be allergic to cephalosporins.
- Time-dependent bacterial killing.

| **CEFACLOR** | |
|---|---|
| Prep | Cap 250mg, Susp 187mg/5mL (30mL) |
| Dose:<br>*General*: **Adult** 250-500mg every 8hrs; **Child** > 1mth: 20mg/kg/day in 3 divided doses, can go up to 40mg/kg/day, max 1g daily. | |
| Notes | • 2nd generation cephalosporin.<br>• Need dose adjustment in renal impairment. |

| **CEFALEXIN/ CEPHALEXIN MONOHYDRATE** | |
|---|---|
| Prep | Cap 250mg, Syrup 125mg/5mL (60mL) |
| Dose:<br>*General:* **Adult** 250mg every 6hrs *or* 500mg every 8-12hrs, increased to 1-1.5g every 6-8hrs for severe infections; **Child** 25-100mg/kg daily in div doses *or* <1yo: 125mg every 12hrs, 1-5yo: 125mg every 8hrs, 5-12yo: 250mg every 8hrs. | |
| Notes | • Protect from light.<br>• Need dose adjustment in renal impairment. |

| **CEFAZOLIN (CEFAZOLIN SANDOZ)** | |
|---|---|
| Prep | Inj 1g |
| Dose:<br>IV: *Osteomyelitis Haematogenous*: 2g every 8hrs. *Pyomyositis*: 2g every 8hrs. *Cellulitis/ Erysipelas*: 1g every 8hrs. *Surgical prophylaxis*: 1-2g stat, as an alternative for non-implant related orthopedic procedures. | |
| Admin | Reconstitute with 2.5mL WFI.<br>Slow IV: over 3-5mins. IV infusion: dilute in 50-100mL NS/D5%. |
| Notes | • 1st generation cephalosporin.<br>• Need dose adjustment in renal impairment. |

| **CEFEPIME HYDROCHLORIDE (MAXIPIME-G)** | |
|---|---|
| Prep<br>Policy | Inj 500mg & 1g<br>A*: ONLY in proven cases of Class I beta-lactamase producing organism i.e *Enterobacteriacae*. |
| Dose:<br>**Adult** *Mild to moderate*: IV/IM: 1g every 12hrs. *Severe*: IV: 2g every 12hrs. *Very severe to life threatening infection*: IV: 2g every 8-12hrs.<br>**Child** >2mth & <40kg: *General*: 50mg/kg every 12hrs. *Septicaemia and febrile neutropenia*: 50mg/kg every 8hrs. | |
| Admin | IV: over 3-5mins at concentration of 100mg/mL; IV infusion: in NS/D5%, max 40mg/mL, over 30mins. Stable for 24hrs at room temperature.<br>IM: May dilute using NS/D5% to final concentration of 280mg/mL. |
| Notes | • 4th generation cephalosporin.<br>• Need dose adjustment in renal impairment.<br>• In severe Infection caused by intermediate to resistant gram negative |

| | |
|---|---|
| | pathogens, may prolong infusion over 3 - 24hrs. |

| **CEFOPERAZONE SODIUM (CEFOBID-G)** | |
|---|---|
| Prep | Inj 0.5g & 1g |
| Dose: *General*: IM/IV bolus/IV infusion: **Adult** 1-2g every 12hrs, *severe infection*: may increase to 4g every 12hrs, max 16g/day in divided dose; **Child** 50-200mg/kg/day in 2-4 divided doses, max 300mg/kg/day. *Uncomplicated gonococcal urethritis*: IM: **Adult** 500mg as single dose. *Surgical prophylaxis*: IV: 1 or 2g for 30-90mins before surgery, may repeat after 12hrs, or continued for 72hrs following completion of colorectal, open heart surgery and prosthetic arthroplasty. | |
| Admin | IM: Inject into large muscle mass of gluteus maximum/ anterior thigh. When administer conc ≥250mg/mL, lignocaine should be added. Prepare injection as below:- |

| Vial (g) | Final conc (mg/mL) | Step 1 **WFI** Vol. (mL) | Step 2 Lignocaine 2% Vol. (mL) | Withdrawable Vol. (mL) |
|---|---|---|---|---|
| 0.5 | 250 | 1.3 | 0.4 | 2.0 |
| 1.0 | 250 | 2.6 | 0.9 | 4.0 |

Reconstitute with 2.5mL WFI/NS/D5% for 0.5g vial & 5mL for 1g vial.
IV bolus: Max dose **Adult** 2g/day; **Child** 50mg/kg/day. Further dilute with NS/D5% to 100mg/mL. Infuse over at least 3-5mins.
IV infusion: Dilute in 20-100mL NS/D5%; infuse over 15mins-1hr.

| | |
|---|---|
| Notes | • 3rd generation cephalosporin. |

| **CEFOPERAZONE & SULBACTAM (SULPERAZON)** | |
|---|---|
| Prep | Inj 500mg Cefoperazone/500mg Sulbactam (1g) |
| Policy | A: Specialists only |
| Dose: IM/IV bolus/IV infusion: *General*: **Adult** 1-2g every 12hrs, *severe infection*: up to 4g every 12hrs*; **Child** 40-80mg/kg/day, max 160mg/kg/day in 2-4 divided doses; **Neonate** in 1st wk life: max 40mg/kg/dose every 12hrs, if more is required, additional *Cefoperazone* may be added. | |
| Admin | IV bolus: Reconstitute 1g vial with 3.4mL WFI/NS/D5%, infuse over ≥3mins. IV infusion: Further dilute to 20mL with the same solution, administer over 15-60mins. |
| Notes | • Need dose adjustment in renal impairment (due to sulbactam component).<br>• *Higher doses may be used for multi-drug resistant *Acinetobacter*. |

| **CEFOTAXIME (CLAFORAN-G)** | |
|---|---|
| Prep | Inj 0.5g & 1g |
| Dose: | |

| | |
|---|---|
| **Adult** *Bacteraemia & non-pseudomonal gram-negative infection*: IV/IM: 1-2g every 12hrs, max 12g/day. *Uncomplicated gonorrhoea*: IM: 0.5-1g as single dose.<br>**Child** IV: *General*: 25mg/kg, <4wks: every 12hrs, >4wks: every 8hrs. *Severe infection*: 50mg/kg, preterm: every 12hrs, 1st wk of life: every 8hrs, 2-4wks: every 6hrs, >4wks: every 4-6hrs *or* Continuous infusion. | |
| Admin | IV bolus: Reconstitute 500mg or 1g vial with ≥2mL and ≥4mL WFI respectively. Inject over 3-5mins. IV infusion: Dissolve 2g in 100mL NS/D5%. Run over 50-60mins. **Child** <17yo: Final conc: 20-60mg/mL, over 30-60mins. IM: Dissolve 1g vial in 4mL WFI. IV is preferred if daily dose >2g. |
| Notes | • 3rd generation cephalosporin.<br>• Need dose adjustment in renal impairment. |

| **CEFTAZIDIME (FORTUM-G)** | |
|---|---|
| Prep | Inj 1g & 2g |
| Dose:<br>IV/IM: *General*: **Adult** 1 to 6g/day in 2-3 divided doses*;* **Child** >2mth: 30-100mg/kg/day in 2-3divided doses; **Neonate & Child** <2mth: 12.5-30mg/kg every 12hrs. *UTI/Less severe infection*: **Adult** 0.5 - 1g every 12hrs. *Most infections*: 1g every 8hrs *or* 2g every 12hrs. *Severe infection*: 2g every 8-12hrs *or* 3g every 12hrs. | |
| Admin | IV bolus: Reconstitute with 4mL WFI for 1g vial & 10mL for 2g vial. Infuse over 3-5mins. IM: Reconstitute 1g with 4mL WFI. Only IV route can be used if single dose >1g. IV infusion: Further dilute with NS/D5%, up to ≥50mL, infuse over 15-30mins. |
| Notes | • 3rd generation cephalosporin.<br>• Need dose adjustment in renal impairment. |

| **CEFTRIAXONE SODIUM (ROCEPHIN)** | |
|---|---|
| Prep | Inj 250mg, 500mg & 1g |
| Dose:<br>IV: *General*: **Adult** 1-2g every 24hrs, up to 4g/day in severe infection; **Neonate** ≤14days: 20-50mg/kg/day; **Child** 15days-12yo: 20-80mg/kg/day, dose >50mg/kg should be given by infusion over >30mins; usual adult dose should be used in children>50kg.<br>*Gonorrhoea*: **Adult** IM: 250mg as single dose. *Meningitis*: **Adult** IV/IM: 2g every 12-24hrs, max 4g/day; **Child** initially 100 mg/kg/dose every 12-24hrs, max 4g/day. | |
| Admin | IM: 250-500mg in 2mL, 1g in 3.5mL 1% Lignocaine HCL. To prepare 1% Lignocaine Inj: dilute 1.8mL 2% Lignocaine Inj with 1.8mL WFI.<br>IV bolus: 250-500mg/5mL WFI or 1g /10mL, over 2-4mins.<br>IV Infusion: 2g in 40mL NS/D5% over ≥30mins. **Neonate** over 60mins, not be administered simultaneously with calcium containing intravenous solutions, including continuous calcium containing infusions/ TPN via a Y-site. |
| Notes | • 3rd generation cephalosporin.<br>• Need dose adjustment in concurrent renal & liver impairment.<br>• Highly protein bound.<br>• Due to the risk of calcium precipitation: C/I in **Neonates** if they require (or are expected to require) treatment with calcium containing IV solutions. In patients over 28 days of age, Ceftriaxone and calcium-containing solutions may be administered sequentially to one another if the infusion |

| | |
|---|---|
| | lines are flushed between infusions with NS. |

| **CEFUROXIME(ZINNAT /-G)** | |
|---|---|
| Prep<br>Policy | Tab 125mg & 250mg, Susp 125mg/5mL (50mL) (A: Specialists, *Pusat Perubatan Primer & Poliklinik Warga*), Inj 750mg & 1.5g |
| Dose:<br>PO: *General*: **Adult** 125-250mg every 12hrs; **Child** 3mth-12yo: 125mg or 10mg/kg every 12hrs, max 250mg/day. *Pneumonia*: **Adult** 500mg every 12hrs. *Otitis media/ severe infections*: **Child** 15mg/kg every 12hrs, max 500mg/day.<br>IM/IV/IV infusion: *General*: **Adult** 750mg-1.5g every 6-8hrs; **Infant & Child** 30-100mg/kg/day in 3-4 divided doses; **Neonate** 30-100mg/kg/day in 2-3 divided doses. IV: *Meningitis*: **Adult** 3g every 8hrs; **Infant & Child** 150-250mg/kg/day in 3 - 4 divided doses. | |
| Admin | Tablet: To be swallowed whole, do not crush tab.<br>IM: Reconstitute with 3mL WFI for 750mg vial. Shake gently to produce an opaque suspension.<br>IV: Reconsitute with ≥6mL WFI for 750mg vial & 15mL for 1.5g vial.<br>IV infusion: For 1.5g vial, may be dissolved with 50mL WFI; infuse over 30mins. |
| Notes | • 2nd generation cephalosporin.<br>• Need dose adjustment in renal impairment. |

## J01DH CARBAPENEMS

| **DORIPENEM (DORIBAX)** | |
|---|---|
| Prep<br>Policy | Inj 500mg<br>A*: Consultant specialist & ID consultant only. For patients in Intensive Care Areas, High Dependency Wards and cases referred to ID consultant. Indications: 1) Ventilator associated pneumonia. 2) *ESBL* infection resistant to Imipenem/ Meropenem and Ertapenem. 3) Nosocomial infections in immunosuppressed patients with high risk of *Pseudomonas* infection in hematology ward. (Consultant Hematologists only) |
| Dose:<br>IV infusion (over 1hr; In *Nosocomial pneumonia* including *ventilator associated pneumonia*, infuse over 4hrs): 500mg every 8hrs for 5-14days. | |
| Admin | Reconstitute 500mg vial with 10mL WFI/NS, then further dilute to 100mL with NS/D5%. |

| **ERTAPENEM (INVANZ)** | |
|---|---|
| Prep<br>Policy | Inj 1g<br>JKTU-item: Not for empiric therapy (except ortho and surgical patients). For patients with confirmed *ESBL* producing gram-negative infections, except *Pseudomonas*. |
| Dose:<br>IM/IV infusion: *General*: 1g daily for 3-14days. | |
| Admin | IM: Reconstitute 1g vial with 3.2mL 2% Lidocaine HCl Inj (without Adrenaline). Deep IM injection into the gluteal muscle/lateral part of thigh. |

| | |
|---|---|
| | IV infusion: Reconstitute 1g vial with 10mL WFI/NS, then dilute to 50mL NS (conc 20mg/mL) or more. To be infused over 30mins. |
| Notes | • Highly protein bound. |

| **IMIPENEM MONOHYDRATE & CILASTATIN (TIENAM)** | |
|---|---|
| Prep<br>Policy | Inj 500mg Imipenem/ 500mg Cilastatin<br>JKTU-item. Only for indications : (EXCLUDING INTENSIVE CARE UNITS)<br>1) Empirical treatment for presumed infections in patients (adult and children) with febrile neutropenia.<br>2) 2nd line treatment for septicaemia and hospital acquired infections. 1st line is Tazocin or Cefepime.<br>3) Serious infections in renal impaired patients.<br>4) For CNS infections, Meropenem is preferred. |
| Dose:<br>**Adult** & **Child** >40kg: IV infusion: 500mg every 6hrs, up to max 4g/day; **Child** >3mo & <40kg: 15mg/kg every 6hrs, max 2g/day. | |
| Admin | IV infusion: Reconstitute with 10mL NS/D5%, transfer to infusion solution container. Repeat again by adding 10mL diluents to same vial. Further dilute with NS/D5%, up to 100mL, concentration 5mg/mL. Infuse over 40-60mins, max rate 25mg/min. |
| Notes | • Can reduce infusion volume to 50mL in fluid restricted patient<br>• In severe Infection caused by intermediate to resistant gram negative pathogens, may prolong infusion over 3hrs.<br>• Need dose adjustment in renal impairment. |

| **MEROPENEM (MERONEM /-G)** | |
|---|---|
| Prep<br>Policy | Inj 500mg & 1g<br>JKTU-item. Only for indications: ( EXCLUDING INTENSIVE CARE UNITS)<br>1) Empirical treatment for presumed infections in patients (adult and children) with febrile neutropenia.<br>2) 2nd line treatment for septicaemia and hospital acquired infections. 1st line is Tazocin or Cefepime.<br>3) Serious infections in renal impaired patients.<br>4) For CNS infections, Meropenem is preferred. |
| Dose:<br>IV: **Adult** *General*: 500mg every 8hrs; **Child** 3mo-12yo: 10-20mg/kg every 8hrs. Adult dose should be used for children >50kg. *Nosocomial Infection*: 1g every 8hrs. *Meningitis*: **Adult** 2g every 8hrs; **Child** 40mg/kg every 8hrs. | |
| Admin | IV bolus: Reconstitute with WFI (5mL/250mg Meropenem). Run over 5mins.<br>IV infusion: Reconstitute with 50-200mL NS/D5%. Infuse over 15-30mins. |
| Notes | • In severe Infection caused by intermediate to resistant gram negative pathogens, may prolong infusion over 3hrs.<br>• Need dose adjustment in renal impairment. |

## J01E SULPHONAMIDES AND TRIMETHOPRIM

| **SULFAMETHOXAZOLE & TRIMETHOPRIM (COTRIMOXAZOLE/ BACTRIM) (OFTEN CONFUSED WITH *CLOTRIMAZOLE*)** | |
|---|---|
| Prep | Inj 400mg SMX/ 80mg TMP (5mL), Tab 400mg SMX/ 80mg TMP, Susp 200mg |

| | |
|---|---|
| | SMX/ 40mg TMP per 5mL (60mL) |
| Dose:<br>IV: *Stenotrophomonas Maltophilia/Burkhoderia Cepacia*: **Adult** 3-5mg (TMP)/kg every 8hrrs; **Child** 6wks to 12yo: 3-4.5mg (TMP)/kg every 12hrs. *P.carinii Pneumonia*: **Adult** 15mg (TMP)/kg/day in 3-4 div doses; **Child** 1mth to 18yo: 10mg (TMP)/kg/dose every 12hrs, total daily dose may be divided into 3 to 4 doses. *Meliodosis maintenance*: **Adult** 5mg (TMP)/kg/dose every 12hrs. *P.carinii Pneumonia prophylaxis*: Oral: **Adult** 2 tablets of 480mg(SMX/TMP) daily; **Child** 1mth-18yo: 450mg/$m^2$, max 2 tablets of 480mg (SMX/TMP) every 12hrs for 3 days of the wk. | |
| Admin | IV infusion:<br>Ampoule required for a dose: 1 (5mL); 2 (10mL); 3 (15mL)<br>Dilute with NS/D5% , up to: 125mL; 250mL; 500mL<br>To be infused over 60-90mins, do not exceed 90mins.<br>Min dilution: 1 ampoule in 75mL, infused over max 60mins.<br>In severe fluid restriction, may be given undiluted via a central venous line. |
| Notes | • TMP = Trimethoprim component, SMX= Sulfamethoxazole component.<br>• In obese patient, use dosing weight. DW = 0.4 (TBW – IBW) + IBW.<br>• Need dose adjustment in renal impairment.<br>• Do not refrigerate the diluted solution.<br>• Associated with Steven-Johnson syndrome & blood dyscrasias, but incidence is rare. |

| **TRIMETHOPRIM** | |
|---|---|
| Prep | Tab 300mg, Syrup 10mg/mL (EX) |
| Dose:<br>*UTI:* **Adult** 1-2mg/kg every 24hrs; **Child** 1mth-12yo: 4mg/kg (max 200mg) every 12hrs. | |
| Admin | Preferably take at night for maximal urinary concentration. |
| Notes | • In obese patient, use dosing weight. DW = 0.4 (TBW – IBW) + IBW.<br>• Need dose adjustment in renal impairment. |

## J01F MACROLIDES, LINCOSAMIDES AND STREPTOGAMINS

### J01FA MACROLIDES

- **S/E:** Nausea/vomiting, diarrhoea, and **arrhythmias**, avoid concomitant use with **Terfenadine, Disopyramide, Amiodarone** & other arrythmogenic drugs.
- **Drug Interaction:** Macrolides are p450 enzyme inhibitors and may increase levels of anticoagulants, antiepileptics, antipsychotics, anxiolytics/hypnotics, **Cyclosporin** and **Theophylline.**
- **Caution** in renal/hepatic impairment & prolongation of QT interval.

| **AZITHROMYCIN (ZITHROMAX /-G)** | |
|---|---|
| Prep<br>Policy | Tab 250mg, Susp 200mg/5mL (15mL)(A*: Only for 1) complicated respiratory tract infection unresponsive to standard macrolide antibiotics; 2) adult uncomplicated genital infection; 3) general cryptosporidium infection; 4) *Toxoplasma gondii* encephalitis), Inj 500mg (A: Specialist only) |

| | |
|---|---|
| Dose:<br>PO: **Adult** *General*: 500mg every 24hrs x 3 days *or* 500mg on day 1 followed by 250mg every 24hrs for next 4 days (same dose for Outpt with CAP); **Child** *Paediatric streptococcal pharyngitis*: (use tab only for wt>45kg, or use susp for wt<45kg) 10mg/kg/dose every 24hrs x 3 days *or* 10mg/kg/dose on day 1, then 5mg/kg/dose daily for next 4 days. *Uncomplicated genital infection*: **Adult** 1g as single dose.<br>IV infusion: **Adult** *Community acquired pneumonia (Hospitalized)*: 500mg every 24hrs for min 2 days, followed by oral therapy for min 5 days, up to 10 days. *Pelvic inflammatory disease*: 500mg every 24hrs for 1-2 days, followed by oral therapy to complete 7 days course. | |
| Admin | IV infusion: Reconstitute with 4.8mL WFI, further dilute with 500mL NS/D5% and infuse over 3hrs at 1mg/mL *or* 250mL NS/D5% and infuse over 1hr at 2mg/mL. |

| **CLARITHROMYCIN (KLACID-G)** | |
|---|---|
| Prep<br>Policy | Tab 250mg (A*: Only for 1) Complicated respiratory tract infection unresponsive to standard macrolides 2) *Helicobacter pylori* infection 3) MAI infection 4) *M chelonae* infection), Tab 500mg Extended Release (A*: ENT Specialist only) |
| Dose:<br>*General*: 250 - 500mg every 12hrs, up to 6-14 days. Extended release: 500 – 1000mg daily. Max 500mg daily in CrCL< 50mL/min. | |
| Admin | Extended release:  Swallowed whole. |
| Notes | • Reduce half dose in renal impairment <30mL/min. Extended release: Not to be used in patient with renal impairment <30mL/min. |

| **ERYTHROMYCIN** | |
|---|---|
| Prep | Inj 500mg (Lactobionate), Susp 400mg/5mL (Ethyl Succinate)(200mL), Tab 400mg (Ethyl Succinate), Tab 250mg (Stearate) |
| Dose:<br>*General*: IV: **Adult** 15-20mg/kg/day, for severe infection, may increase up to 4g/day; **Neonate** refers to ***NICU preprinted order sheet***. PO(E.E.S.): **Adult** 800mg every 12hrs or 400mg every 6hrs, max 4g/day; **Child** 30-50mg/kg/day in div doses, every 6hrs, dose maybe doubled in severe infection.<br>*Feeding intolerance due to dysmotility*: PO: **Child** 10mg/kg/dose every 6hrs for 2 days then 4mg/kg/dose every 6hrs for 5 days.<br>*As prokinetic agent*: **Adult** IV: 300mg daily in divided doses or 250mg four times a day or single doses of 70mg and 200mg. PO: 50mg every 8hrs up to 250mg every 6hrs. | |
| Admin | IV: Reconstitute 500mg vial with 10mL WFI, then dilute further with NS. IV slow continuous infusion: Dilute to final concentration of 1mg/mL. Intermittent infusion: Dilute to final concentration of 1-5mg/mL (i.e 500mg in 100-500mL), infuse over 20-60mins. Do not use D5% unless it's buffered with Sodium Bicarbonate (5mL of Sodium Bicarbonate 8.4% to 1 L of D5%). |
| Notes | • When prescribing erythromycin as a prokinetic, consideration should be given to its potential to interact with other drugs, and the possibility of cardiovascular complications. |

## J01FF LINCOSAMIDES

| **CLINDAMYCIN (DALACIN-G)** | |
|---|---|
| Prep<br>Policy | Cap 150mg (HCl Hydrate), Inj 300mg/2mL (Phosphate)<br>A*: ONLY for *Toxoplasma gondii* encephalitis treatment, and severe *P Carinii* Pneumonia |
| Dose:<br>*General*: **Adult** IV/IM: 600mg/day to maximum 4800mg/day in divided doses; **Child** >1 month: IV 20-40mg/kg/day in 3 or 4 equal divided doses.<br>*P Carinii Pneumoni*: **Adult** IV: 600mg every 8hrs; PO: 300-450mg every 6hrs for 21 days.<br>*Toxoplasma gondii encephalitis*: IV/PO: 600mg every 6hrs, for at least 6wks.<br>*Gas Gangrene*: IV: 900mg every 8hrs. | |
| Admin | Swallow whole capsule with water.<br>IM: Not recommended for single dose >600mg.<br>IV: Dilute 600mg in 50mL D5%/NS, infuse over 20mins. Max conc 12mg/mL and max rate 30mg/mins. |
| Notes | • Discontinue if develop diarrhea. |

## J01G AMINOGLYCOSIDE ANTIBACTERIALS

- **S/E**: Dose-related, ototoxicity and nephrotoxicity; avoid concurrent use with potential ototoxic diuretics e.g *Frusemide* and *Amphotericin B*.
- Plasma concentration monitoring is essential. Please refer to the sampling guide and reference range in appendix. Dose should be adjusted according to serum concentrations. Please consult pharmacy for details of dose adjustment.
- Monitor IV aminoglycosides levels at least twice weekly and three times weekly for patients with unstable renal function. Do not take blood sampling from venous sites used to administer the drug.
- Concentration-dependent bacterial killing.
- **C/I**: *Myasthenia Gravis*: may impair neuromuscular transmission.

| **AMIKACIN** | |
|---|---|
| Prep | Inj 250mg/2mL & 500mg/2mL |
| Dose:<br>**Adult & Child** *Extended interval (Oncedaily dosing) (Not for Meningitis, pregnancy, endocarditis):* IV infusion: 15-20mg/kg. *Multiple daily dosing*: IM/Slow IV/IV infusion: 15mg/kg in 2 divided doses, up to 22.5mg/kg in 3 divided doses. *Mycobacterial infection*: 15mg/kg 3 times/week for 2-6mths in severe cases. IT: to be used with systemic administration. **Neonate/Premature** refers to ***NICU preprinted order sheet***. | |
| Admin | IV: Dilute 500mg with 100-200mL NS/D5%, max 5mg/mL, infuse over 30-60mins in adult/child, 1-2hrs in infants.<br>IT: Please consult with pharmacy sterile unit for preparation. |
| Notes | • Preservatives such as Sodium bisulfite preservative may increase risk of neurotoxicities when given as IT.<br>• For other indications, refer to chapter ***S01 Opthalmologicals***. |

| **GENTAMICIN** |
|---|

| | |
|---|---|
| Prep<br>Policy | Inj 80mg/2mL (as sulphate), Gentamicin Beads (Septopal) 30's (Unregistered Product) |
| Dose:<br>*Extended interval (Once daily dosing) (Not for Meningitis, pregnancy, endocarditis)*: IV infusion: **Adult** 5-7 mg/kg, **Child** 1mth-18yo: initial 7mg/kg, then adjust accordingly. *Multiple daily dosing*: IV/IM: **Adult** 3-5mg/kg/day in 2 to 3 div doses; **Child** 1mth-12yo: 2.5mg/kg every 8hrs; 12-18yo: 2mg/kg every 8hrs. IT: to be used with systemic administration. **Neonate/Premature** refers to ***NICU preprinted order sheet***. | |
| Admin | Slow IV: Infuse over 3-5mins.<br>IV infusion: Dilute in 50-100mL NS/D5%, infuse over 30mins to 1hr.<br>IT: Please consult with pharmacy sterile unit for preparation. |
| Notes | • Exclusion criteria for using *Extended and single daily dosing*: Endocarditis, pregnant, severe renal insufficiency and neutropenia.<br>• For other indications, refer to chapter ***S01 Ophthalmologicals***, ***R01 Nasal preparations*** & ***D06 Antibiotics & chemotherapy for dermalogical use***. |

| **NETILMICIN SULPHATE** | |
|---|---|
| Prep | Inj 50mg/mL & 150mg/2mL |
| Dose:<br>*Conventional dosing*: IV/IM: 3-5mg/kg/day in divided doses. *Single daily dose*: IV Infusion (over 30mins): 5mg/kg every 24hrs, reduce dose in reduced GFR. *Extended interval dosing*: IV Infusion (over 30mins): 5-7mg/kg/day every 24hrs, extend interval to 48-72hrs in reduced GFR. | |
| Admin | Slow IV: over 3-5mins. Slow IV /IV infusion: Dilute with NS/D5%, max conc 1mg/mL, over 30-120mins. |

| **STREPTOMYCIN** | |
|---|---|
| Prep | Inj 1000mg (as sulphate) |
| Dose:<br>*Tuberculosis:* IM: 15(ranged 12-18)mg/kg/dose, max 1000mg daily or max 1.5g thrice weekly; >60yo: 10mg/kg/dose, max 750mg daily or max 1000mg thrice weekly. *Endocarditis (gram positive organism)*: IM: 7.5mg/kg every 12hrs. | |
| Admin | IM: Add 4.2-4.5mL NS/WFI, final conc 200mg (base)/mL *or* add 3.2-3.5mL diluents, final conc 250mg/mL. [Not approved for IV use, however, has been used in patients with insufficient muscle mass] IV: Dilute in 100mL NS/D5%, infuse over 30-60mins. |
| Notes | • Contraindicated in pregnancy.<br>• To adjust dose in renal impairment. |

## J01M QUINOLONE ANTIBACTERIALS

- Equivalent plasma concentrations when given orally or IV, use oral route as soon as possible.

- Cautious use in pregnancy, children and epilepsy. May increase risk of tendinitis and tendon rupture, which is further increased in those over age 60, in kidney, heart, and lung transplant recipients, and with use of concomitant steroid therapy: at the first sign of unexplained tendon pain, swelling, or inflammation, advice patient to discontinue treatment and to avoid exercise and use of the affected area.

| **CIPROFLOXACIN (CIPROBAY-G)** | |
|---|---|
| Prep | Inj 200mg/100mL, Tab 250mg & 500mg (A: Specialists only), Susp 50mg/mL (EX) |
| Dose:<br>**Adult** IV: 200mg every 12hrs, doubled in severe infection. *UTI*: 100-200mg every 12hrs, *Bone &joint infection* 200-400mg every 12hrs. *Severe/complicated infections, pt with sepsis or neutropenia, Ps. Aeruginosa infections*: 200-400mg every 8hrs. *VAP/HCAP*: 400mgevery 8hrs.<br>Oral: *General*: 250-750mg every 12hrs. | |
| Admin | ±  Oral should be administered at least 2 hours before or 6 hours after magnesium/aluminum antacids, or sucralfate, Videx® (Didanosine), other highly buffered drugs, or other products containing calcium, iron or zinc.<br>IV infusion: over 60mins. |
| Notes | • Need dose adjustment in renal impairment.<br>• Protect from light, should be removed from the box only immediately before use.<br>• For other indications, refer to chapter ***S01 Ophthalmologicals***. |

| **OFLOXACIN (TARIVID)** | |
|---|---|
| Prep<br>Policy | Tab 100mg & 200mg<br>A*: Only for 1) Second line treatment of leprosy 2) Genital tract infection (gonorrhoea, urethritis, proctitis, prostatitis) 3) Pelvic inflammatory disease [PID] |
| *Treatment of leprosy*: 800mg daily in 2-3 divided doses. *Gonorrhoea*: 400mg as single dose. *PID*: 400mg every 12hrs for 10 days. | |
| Admin | ±  |
| Notes | • For other indications, refer to chapter ***S01 Ophthalmologicals***. |

| **MOXIFLOXACIN (AVELOX)** | |
|---|---|
| Prep<br>Policy | Inj 400mg/250mL (A*: Acute exacerbation of chronic bronchitis, community acquired pneumonia, only for Medical ward patients), Tab 400mg (A*: **Inpatient:** Medical & ENT wards. **Outpatient:** ENT & Respi Specialists only. For 1) Acute exacerbation of chronic bronchitis, community acquired pneumonia 2) 2nd line treatment for acute sinusitis. |
| Dose:<br>PO/IV: *Chronic bronchitis*: 400mg daily for 5 days. *Community Acquired Pneumonia*: 400mg daily for 7-14 days. *Acute sinusitis*: 400mg daily for 7 days. | |
| Admin | IV infusion: over 60mins. |
| Notes | • Quinolone of choice for second line antiTB (need special approval) |

## J01X OTHER ANTIBACTERIALS
## J01XA GLYCOPEPTIDES

| **TEICOPLANIN (TARGOCID)** | |
|---|---|
| Prep | Inj 200mg |
| Policy | JKTU item: As second line therapy for MRSA infection. |
| Dose: **Adult** *Moderate infection (Skin & soft tissue infection)*: IV: 400mg, then maintenance IV/IM: 200mg daily. *Severe infection (joint & bone infection, septicemia, endocarditis)*: IV: 400mg every 12hrs x 3 doses, maintenance with IV/IM: 400mg daily. **Child** >2mth: IV: loading 10mg/kg every 12hrs x 3 doses, IV/IM: maintenance-*moderate infection*: 6mg/kg daily; *severe*: 10mg/kg daily. **Neonate** IV infusion (over 30mins): 16mg/kg on 1st day, maintenance 8mg/kg daily. | |
| Admin | IV: Reconstitute 3mL WFI (diluent provided). Administer as bolus or infusion over 30mins. |
| Notes | • For wt>85kg: moderate infection 3mg/kg/day; severe infection 6mg/kg/day.<br>• Need renal dose adjustment. |

| **VANCOMYCIN** | |
|---|---|
| Prep | Inj 500mg |
| Policy | A*: Only for 1) Confirmed MRSA infection 2) MRSA prophylaxis in NICU 3) Septicaemia in IV drug users 4) Bone infections (hematogenous, prosthetic joint) 5) Gastroenteritis with *Clostridium difficile* toxin & positive antibiotic associated colitis 6) Infective endocarditis (native/prosthetic valve) 7) IPD associated peritonitis 8) Vascular infection for vascular access sites in the very ill or confirmed MRSA septicaemia 9) Bacterial endocarditis prophylaxis in dental/ upper-respiratory tract/ oesophageal procedures or GI/ genitourinary procedures in penicillin allergy patients 10) Intravitreal inj for ophthalmic infection in endophathalmitis. |
| Dose: IV Infusion: **Adult** 15-20mg/kg/dose (actual body weight) every 8-12hrs, not to exceed 2g/dose; may consider loading dose of 25-30mg/kg/dose (actual body weight) in seriously ill patients (eg. those with sepsis, meningitis, pneumonia, or infective endocarditis) with suspected MRSA infection; **Child** >1mth: 10mg/kg every 6hrs; **Neonate** at every 6-18hrs according to days/weeks or life (please refer to ***Neofax***) *Meningitis*: 15mg/kg/dose. *Bacteremia*: 10mg/kg/dose. | |
| Admin | IV infusion: Reconstitute with 10mL WFI. Dilute further with NS/D5%, max conc 5mg/mL (via peripheral line) & 10mg/mL (via central line). Infuse over 60mins or max 10mg/min. Avoid rapid IV infusion which may lead to anaphylactoid reactions. For loading dose, prolong infusion over 2hrs or use antihistamine prior to infusion. |
| Notes | • It is not absorbed orally.<br>• S/E: Monitor renal & auditory function in patients prescribed concurrent drugs that are neurotoxic and/or nephrotoxic e.g. *Aminoglycosides*, *Amphotericin B* and *Frusemide*.<br>• Plasma concentration monitoring is essential. Please refer to the sampling |

| | |
|---|---|
| | guide and reference range in appendix. Dose should be adjusted according to serum concentrations. Please consult pharmacy for details of dose adjustment including renal dose.<br>• Keep vancomycin trough above 10mg/L (6.9µmol/L) to avoid resistance.<br>• Target Vancomycin trough at 15-20mg/L (10.3-13.8µmol/L) in complicated infectons e.g bacteremia, endocarditis, osteomyelitis, meningitis, hospital acquired pneumonia caused by *S. aureus*.<br>• For other indications, refer to chapter ***S01 Ophthalmologicals***. |

## J01XB POLYMYXINS

- Concentration-dependent bacterial killing.

| **POLYMYXIN B** | |
|---|---|
| Prep<br>Policy | Inj 500,000 units<br>Unregistered Product |
| Dose:<br>IV: **Adult & Child** 15,000 - 25,000units/kg/day in 2 div doses, max 25,000units/kg/day; **Infant** max 40,000units/kg/day. *MDR Acinetobacter infection*: **Adult** 25,000units/kg/day.<br>IM: **Adult & Child** 25,000-30,000units/kg/day divided every 4-6hrs; **Infant** max 40,000units/kg/day.<br>IT: *Meningitis*: **Adult & Child** >2yo: 50,000units daily for 3-4days then 50,000units EOD for ≥2 wks till CSF –ve or sugar content normalized; **Child** <2yo: 20,000units daily for 3-4 days, then 25,000units EOD for ≥2wks. | |
| Admin | IM: Reconstitute 500,000units in 2mL WFI.<br>IV: Further dilute each 500,000units in 300-500mL D5, infuse over 60mins. Total dose can be divided equally and given every 12hrs.<br>IT: Please consult with pharmacy sterile unit for preparation. Reconstitute each 500,000units in 10mL NS. |
| Notes | • May be used as ophthalmic instillation or subconjunctival injection with different dilution; Refer to ophthalmologist.<br>• 1mg base = 10,000units, 100mg =1million units = 1 mega unit.<br>• Need dose adjustment in renal impairment.<br>• Use total body weight for dosing.<br>• Reconstituted solution stable at 2-8°C for 72hrs. Protect from light. Retained in carton until time of use. |

| **POLYMYXIN E (Colomycin-G)** | |
|---|---|
| Prep<br>Policy | Inj 1.0 MIU [as Colistimethate Sodium]<br>Unregistered Product |
| Dose:<br>IV: **Adult & Child** <60kg: 0.5 - 0.75MIU/kg/day divided to 3 doses; >60kg, 1-2 MIU every 8hrs, max 6MIU/day. *XDR Acinetobacter*: see below *. In severe bacteremia or VAP | |

| | |
|---|---|
| with Acinetobacter, 9MIU loading dose followed by 3 MIU every 8 hrs, (starting 8 hrs after loading dose) Inhalation: **Adult & Child** 1-2MIU every 12hrs, max 2 MIU every 8hrs; **Child** <2yo: 0.5 – 1 MIU every 12hrs. | |
| Admin | IV: Reconstitute 1MIU vial with 2mL WFI. The required dose (regardless of number of vials) can be further diluted with 10-50mL NS/D5%, infuse over 30mins.<br>9MIU can be diluted with 100mL NS/D5%, run over 30 min.<br>Inhalation (as nebulised solution): Add 2mL WFI/NS for each 1MIU vial, then pour into nebulizer. Solution for inhalation should be USED IMMEDIATELY after being mixed. |
| Notes | • MIU = million international units.<br>• 150mg colistin base activity ≈ 5MIU colistimethate sodium ≈ 400mg CMS sodium.<br>• **Only In severe Bacteremia or VAP with XDR Acinetobacter*: 9MIU Loading dose, followed by 3MIU every 8hrs, starting 8hrs after loading dose. [Confirmed with Dr. Petrick Periyasamy]. Precaution: for other infection with XDR Acinetobacter, such high dose will need to be discussed with ID Physician before initiating.<br>• Need dose adjustment in renal impairment.<br>• Solution for inhalation should be USED IMMEDIATELY after being mixed, as once mixed into a liquid form, the product begins to break down into other chemicals that can damage lung tissue. Any unused mixed liquid form should be discarded.<br>• Colistin CSF penetration is low.<br>• Use within 8hrs of dilution<br>• Use ideal body weight for dosing.<br>• Protect from light. Retained in carton until time of use. |

## J01XC OTHER ANTIBACTERIALS

| **FUSIDIC ACID** | |
|---|---|
| Prep<br>Policy | Tab 250mg, Inj 500mg<br>A*: Only for 1) Confirmed MRSA infection 2) Bone infection [prosthetic joint/septic arthritis] |
| Dose:<br>PO: **Adult & Child** >12yo: *General*: 500mg every 8hrs. *Skin & soft tissue infections*: 250mg every 12hrs, doubled in severe infection.<br>IV infusion: **Adult** 500mg every 8hrs, max 2g/day; **Child** 20mg/kg/day divided into 3 equal doses. | |
| Admin | IV infusion: Add 10mL of buffer solution into the vial, dilute further with 250-500mL NS/D5%. Infuse over 2-4hrs. |
| Notes | • To use in combination.<br>• **Electrolyte** $Na^+$ 3.1mmol in each vial.<br>• For other indications, refer to chapter ***D06 Antibiotics & chemotherapy for dermalogical use***. |

## J01XD IMIDAZOLE DERIVATIVES

| **METRONIDAZOLE (FLAGYL-G)** | |
|---|---|
| Prep | Inj 500mg/100mL, Tab 200mg & 400mg, Susp 200mg/5mL (100mL) |
| Dose:<br>IV: **Adult** 500mg every 8hrs; **Child** loading dose 15mg/kg, maintenance 7.5mg/kg every 8hrs<br>PO: **Adult** 800mg initially, 400mg every 8hrs, **Child** 7.5mg/kg every 8hrs. *Helicobacter pylori/ PID*: **Adult** 400mg every 12hrs. *Hepatic abscess*: **Adult** (when convert from IV) 800mg every 8hrs. *Amoebiasis*: **Adult** 400-800mg every 8hrs x 5-10 days; **Infant & Child** 40mg/kg/day in div doses, given every 8hrs. *Acute oral infection*: **Adult** 200mg every 8hrs for 3-7 days; **Child** 1-3yo: 50mg every 8hrs; 3-7yo: 100mg every 12hrs; 7-10yo: 100mg every 8hrs. | |
| Admin | IV infusion: Dilute with NS, final conc 5-8mg/mL. Infuse over 30-60mins. |
| Notes | • Protect from light.<br>• Avoid alcohol, may cause a disulfiram-like reaction (flushing, palpitations etc). Other side effects: unpleasant taste, furred tongue, dizziness, headache, ataxia, dark urine and leucopenia, rarely peripheral neuropathy. |

## J01XE NITROFURAN DERIVATIVES

| **NITROFURANTOIN** | |
|---|---|
| Prep | Tab 100mg |
| Dose:<br>*General*: **Adult** 50-100mg every 6hrs for 7 days; **Child** >3mo: 0.75mg/kg every 6hrs. *Uncomplicated cystitis*: **Adult** 100mg every 12hrs. *UTI prophylaxis*: **Adult** 50-100mg at night; **Child** >3mo: 1mg/kg at night. | |
| Admin |  |
| Notes | • Reduce dose or discontinue if nausea. |

## J01XX OTHER ANTIBACTERIALS

| **LINEZOLID (ZYVOX)** | |
|---|---|
| Prep<br>Policy | Tab 600mg, Inj 600mg/300mL<br>A*: Only for 1) For glycopeptides resistance and proven MRSA infection 2) To complete treatment for MRSA bone & lung infection (discharged case, max supply for 4wks only). Should be initiated by Consultant Physicians and Infectious Disease Consultant. |
| Dose:<br>IV/PO: **Adult** & **Adolescent** >12yo: 600mg every 12hrs for 10-14days. | |
| Admin | IV infusion: Infuse over 30-120mins. |
| Notes | • PO: Avoid large quantities of food containing high tyramine. Pressor response is significant if taken with tyramine doses more >100mg.<br>• Reversible myelosuppression reported. FBC need to be monitored in patients with or pre-existing myelosuppression. Bleeding risk may increase for those who receive medications that may decrease Hb levels, platelet count or function, or who receive linezolid for >2wks and have severe renal impairment. |

| | |
|---|---|
| | • Should not be given with another MAOI or within 2wks of stopping another MAOI. |

| **DAPTOMYCIN (CUBICIN)** | |
|---|---|
| Prep<br>Policy | Inj 500mg<br>A*: Only for 10 patients/yr. Infectious Disease Consultant and Head of Cardiology unit only (for second indication) 1) 2nd line treatment of complicated skin & skin structure infections not responding to Vancomycin despite good trough levels of Vancomycin 2) 2nd line treatment of persistent MRSA bacteremia after 7 days of Vancomycin including those with right-sided infective endocarditis not responding to Vancomycin despite good levels after 1-2wks. |
| Dose:<br>IV infusion: *Complicated skin & skin structure infections*: 4mg/kg/dose every 24hrs for 7-14 days. *Staph aureus bloodstream infections (bacteremia) including right-sided endocarditis caused by methicillin-susceptible & resistant isolates*: 6mg/kg/dose every 24hrs for 2-6wks. | |
| Admin | Reconstitute vial with 10mL NS. Stand undisturbed for 10mins. Further dilute with 50mL NS and infuse 30mins. |
| Notes | • Use Total Body Weight for dosing.<br>• Need dose adjustment in renal impairment.<br>• Fridge Item. |

# J02 ANTIMYCOTICS FOR SYSTEMIC USE

| **AMPHOTERICIN B (AS SODIUM DEOXYCHOLATE COMPLEX) (FUNGIZONE-G)** | |
|---|---|
| Prep | Inj 50mg |
| Dose:<br>IV infusion: 0.25mg/kg every 24hrs, gradually increased if tolerated to 1mg/kg every 24hrs, max 1.5mg/kg/day. | |
| Admin | Reconstitute each vial with 10mL WFI to produce a 5mg/mL solution (stock solution). For test dose, take 0.2mL (1mg) and then dilute further with 20mL D5, then run over 20-30min. Once tolerated, take [prescribed dose/5] mL from stock solution and dilute further with 500mL D5 (for dose<50mg) or 1000mL (for dose >50mg) and run over 4-6hrs. Max conc 0.1mg/mL. |
| Notes | • Protect from light.<br>• Fridge item.<br>• Incompatible with saline solutions.<br>• Please refer to ***Amphotericin B Infusion Protocol/Sheet***.<br>• If need filter, use pore size NOT < 1micron.<br>• For other indications, refer to chapter ***S01 Ophthalmologicals***. |

| **ANIDULAFUNGIN (ERAXIS)** | |
|---|---|
| Prep<br>Policy | 100mg Inj<br>A*: Hematologists (10 quota), ID Specialist & Nephrologists (Share 5 quota) only. Max number of patients: 15/yr. |
| Dose:<br>*Invasive candidiasis*: IV infusion: **Adult** 200mg loading dose, then 100mg/day; **Child** 2–17yo: 1.5mg/kg/day. | |
| Admin | Reconstitution: with companion solvent (20% ethanol anhydrous in WFI). |

Dilution for Anidulafungin administration

| Dose | Total Reconstituted volume required | Infusion volume | Total infusion volume | Rate of infusion |
|---|---|---|---|---|
| 100mg | 30mL | 250mL | 280mL | 3mL/min |
| 200mg | 60mL | 500mL | 560mL | 3mL/min |

Max rate of infusion 1.1mg/min (~3mL/min).

| Notes | • Reconstituted solution stable at 25°C for 24hrs. |
|---|---|

| **CASPOFUNGIN (CANCIDAS)** | |
|---|---|
| Prep<br>Policy | Inj 50mg & 70mg<br>A*: Respiratory Specialist, Nephrologist & ID consultant only. Limit to 6 patients/yr. 2 quota for Nephrology unit, 1 quota for Respiratory unit and 3 for Infectious Disease. Indicated for the treatment of 1) Invasive Candidiasis, including candidemia 2) Esophageal Candidiasis 3) Invasive aspergillosis in patients who are refractory to or intolerant of other therapies (i.e. amphotericin B , lipid formulations of amphotericin B and/or itraconazole) |
| Dose:<br>IV infusion: *General*: Loading 70mg on day 1, followed by 50mg daily. *Invasive candidiasis*: Continue for min 14 days after the last positive culture or after neutropenia resolved. | |

| | |
|---|---|
| Admin | Reconstitute vial (70mg for loading dose or 50mg for daily dose) with 10.5mL WFI/NS. Further dilute in 250mL NS. Diluent volume may be reduced if required, max conc 0.5mg/mL. Infuse over 1 hr. |
| Notes | • Reduce maintenance dose to 35mg daily in moderate hepatic insufficiency (Child-Pugh score 7-9).<br>• Co-administration with strong CYP inducers (rifampicin): 70mg IV daily.<br>• Fridge item.<br>• Not stable in diluents containing dextrose. |

| **FLUCONAZOLE (DIFLUCAN-G)** | |
|---|---|
| Prep<br>Policy | Inj 100mg/50mL, Cap 50mg & 100mg<br>A: Specialist only |
| Dose:<br>**Adult** IV infusion: *Candidemia in non-neutropenic patient*: 800mg loading dose, followed by 400mg (6mg/kg) every 24hrs. *Oropharyngeal*: 100mg every 24hrs. *Oesophageal*: 200mg, then 100mg every 24hrs. *Cryptococcal meningitis (after AmphoB) & Cryptococcal infections*: PO: 200mg-400mg every 24hrs (refer guidelines for total duration).<br>**Child** IV infusion: *Systemic Candidiasis & Cryptococcal infections*: 6-12mg/kg every 24hrs. *Mucosal candidiasis*: 3mg/kg every 24hrs, may give LD 6mg/kg on 1st day; PO: 50-400mg every 24hrs. | |
| Admin | IV infusion: Infuse at rate 5-10mL/min. |
| Notes | • Dose according to indication/infection. Refer to ***PPUKM Anti-infective Guideline, 2012***.<br>• Need dose adjustment in renal impairment. |

| **FLUCYTOSINE (ANCOTIL)** | |
|---|---|
| Prep<br>Policy | Tab 500mg, Inj 1%<br>Unregistered Product |
| Dose:<br>*Endocarditis /Cryptococcal meningitis (to give with Amphotericin B)*: IV infusion/PO: 100mg/kg/day, to divide dosage in 4 divided doses. | |
| Admin | IV infusion: Infuse over 20-40mins.<br>PO: ± Nausea & vomiting may be minimized if the dose is spaced over a 15mins period. |
| Notes | • Need dose adjustment in renal failure.<br>• Use Ideal Body Weight.<br>• Store below 25$^0$C. |

| **ITRACONAZOLE (SPORANOX)** | |
|---|---|
| Prep<br>Policy | Oral Solution 10mg/mL (150mL), Cap 100mg<br>A*: Specialist and *Pusat Perubatan Primer* only. For confirmed deep-seated mycosis (*Aspergillus* only) & Fluconazole resistant candida infection |
| Dose:<br>*Invasive pulmonary infection*: Caps: 200mg every 8hrsx3 days, then 400mg every 24hrs. *Cutaneoues candidiasis (incl. paronychia), if 1st line fail*: Caps: 200mg every 24hrsx2wks. *Oral Candidiasis/Thrush*: Caps: 200mg every 24hrs *or* Oral solution: 100mg every 24hrs. | |

| | |
|---|---|
| Admin | Capsule:  Take immediately after full meal for optimal absorption. Swallowed whole.<br><br>Oral solution:  Do not eat within 1 hour of taking. Swirl around mouth for around 20secs & swallow. Do not rinse. |
| Notes | • Caution in patients at high risk of heart failure.<br>• Capsule has unreliable absorption and is not recommended as empirical therapy. Absorption is improved when the capsules are taken with food or an acidic cola beverage.<br>• For other indications and dosage, please refer ***PPUKM Anti-infective Guideline, 2012***. |

| **KETOCONAZOLE (NIZORAL)** | |
|---|---|
| Prep<br>Policy | Tab 200mg<br>A: Specialists only |
| Dose:<br>*General*: Oral: **Adult** 200-400mg every 24hrs. | |
| Admin |  Take with food to increase absorption. |
| Notes | Use with caution in patient with hepatic and renal impairment. |

| **NYSTATIN (MYCOSTATIN)** | |
|---|---|
| Prep | Tab 500,000units, Susp 100,000units/mL (60mL), Pessary 100,000units |
| Dose:<br>Susp: *Oral candidiasis*: **Adult** 100-600,000units every 6hrs, continue for ≥2 days after cure clinically; **Infants** 100,000 to 200,000units every 6hrs. Tab: **Adult** *Intestinal candidiasis*: 500-1,000,000units every 8hrs; *Prophylaxis*: 50,000units every 12hrs. Pessary: 1 to 2 tablets (100,000 to 200,000units) every 24hrs, deposited high in the vagina using applicator. | |
| Admin | Susp: Hold in mouth for several mins, swish & swallow orally. |

| **POSACONAZOLE (NOXAFIL)** | |
|---|---|
| Prep<br>Policy | Susp 40mg/mL (105mL)<br>A*: Hematologists only. Limit to 10 patients/year. 1) Prophylaxis for allogenic stem cell transplantation 2) Prophylaxis for induction chemotherapy for ALL/AML 3) Treatment for disseminated fungal infection if failed Itraconazole/Fluconazole or intolerant to Amphotericin B Therapy. |
| Dose:<br>*Refractory Invasive Fungal Infections/Intolerant Patient with Invasive Fungal Infection*: 400mg (10mL) every 12hrs, if intolerant orally, 200mg (5mL) every 6 hrs. *Prophylaxis of Invasive Fungal Infections*: 200mg (5mL) every 8hrs. | |
| Admin |  Should be administered with a meal, or with 240mL of a nutritional supplement. Shake well before use. |
| Notes | • Contraindicated with HMG-CoA reductase inhibitors, e.g. simvastatin. Posaconazole may increase the plasma concentrations of statins that are metabolized by CYP3A4. |

| | |
|---|---|
| | • No renal adjustment required. Not removed by dialysis.<br>• Absorption increased with food, even greater with high fat meal. |

| **TERBINAFINE (LAMISIL)** | |
|---|---|
| Prep<br>Policy | Tab 250mg<br>A*: Dermatologist. Only for fungal candidiasis caused by dermatophytes. |
| Dose:<br>*General*: **Adult** 250mg every 24hrs; **Child** ≥2yo: >40kg: 250mg, 20-40kg: 125mg, <20kg: 62.5mg every 24hrs. | |
| Admin | ±  |

| **VORICONAZOLE (VFEND)** | |
|---|---|
| Prep<br>Policy | Tab 50mg & 200mg, Inj 200mg<br>A*: Hematologist (Adult & Peads)(9 quota), Nephrologist (6 quota) & ID Specialist (3 quota) only. Limit to 15patients/year (14 days/patient for inj & tab according to prescription). For 1) Treatment of invasive *Aspergillosis* 2)Treatment of Fluconazole resistant serious invasive *Candida* infection (including *C krusei* & *C glabrata*) 3)Treatment of serious fungal infection caused by *Scedosporium spp* & *Fusarium spp* |
| Dose:<br>**Adolescents** 12-16yo: Should be dosed as adults; 2-<12yo: PO: 200mg every 12hrs. | |
| Admin | PO: Take at least 1hr before or after meal.<br>IV: Dilute Voriconazole powder with 19mL WFI (=10mg/mL), further dilute with NS/D5%, final conc 0.5-5mg/mL. Max conc 5mg/mL. Infuse over 1-2hrs, max rate 3mg/kg/hr. |
| Notes | • Not recommended for children <2yo.<br>• Fridge item.<br>• Electrolyte disturbances e.g hypokalemia, hypomagnesemia, hypocalcemia should be corrected prior to Voriconazole therapy. |

| | **IV** | **Oral**<br>Patient ≥40kg | **Oral**<br>Patient <40kg |
|---|---|---|---|
| Loading dose for all indication (Day 1) | 6mg/kg every 12hrs | 400mg every 12hrs | 200mg every 12hrs |
| Maintenance dose (Day2 onwards) | 3mg/kg every 12hrs | 200mg every 12hrs | 100mg every 12hrs |
| Invasive Aspergillosis/ Scedosporium & Fusarium infections | 4mg/kg every 12hrs | 200mg every 12hrs | 100mg every12hrs |

## J04 ANTIMYCOBACTERIALS

- **Ethambutol** is contraindicated in optic neuritis, advice patients to report visual disturbances.
- **Isoniazid** may cause peripheral neuropathy, esp. with pre-existing risk factors e.g. diabetes, alcoholism, chronic renal failure and malnutrition, consider pyridoxine 10mg daily as prophylaxis.
- **Rifampicin Interactions**: potent hepatic enzyme inducer may reduce levels of other drugs, e.g. oestrogens, corticosteroids, phenytoin, sulphonylureas and anticoagulants.
- **Rifampicin S/E**: transient liver enzymes ↑ (seek urgent medical advice if nausea/vomiting or jaundice; monitor liver function); red discoloration – urine/sputum/tears/soft contact lenses.

| **AKURIT-4** | |
|---|---|
| Prep | Tab Isoniazid 75mg +Rifampicin 150mg +Pyrazinamide 400mg +Ethambutol 275mg |
| Dose:<br>*Tuberculosis Intensive phase* (for 2mths): | |

| Body Weight (kg) | Dose |
|---|---|
| 30 - 37 | 2 tablets daily |
| 38 - 54 | 3 tablets daily |
| 55 - 70 kg | 4 tablets daily |
| More than 70 kg body weight | 5 tablets daily |

| | |
|---|---|
| Admin |  |

| **AKURIT-2** | |
|---|---|
| Prep | Tab Isoniazid 75mg +Rifampicin 150mg |
| Dose:<br>*Tuberculosis Maintenance phase*: 1 tab/15kg body weight for 4mths. | |
| Admin |  |

| **CLOFAZIMINE (LAMPRENE)** | |
|---|---|
| Prep | Capsule 50 & 100mg |
| Dose:<br>Multibacillary leprosy: 300mg once-monthly, supervised, and 50mg daily self administered. Should be treated for at least 2 yrs. | |
| Admin |  Take with meals or with milk to increase absorption. |
| Note | A three-drug regimen is recommended for multibacillary leprosy ( Rifampicin, Clofazimine and Dapsone)<br>Most common side effects are pink to brownish-black pigmentation in 75%-100% of patients within a few weeks of treatment. But is usually reversable when drug is discontinued. |

| **DAPSONE** |
|---|

| Prep | Tab 100mg |
|---|---|
| Dose:<br>Leprosy: In combination with one or more antileprosy agents: 50-100mg Dapsone once daily (for adults weighing < 35kg: 50mg daily or 1-2mg/kg daily) Max dose for leprosy : 100 mg daily. Max dose for Dermatitis herpetiformis suppressant : 300 mg daily. | |
| Admin | ±  May take with meals if GI upset. |

| **ETHAMBUTOL HYDROCHLORIDE** | |
|---|---|
| Prep | Tab 400mg |
| Dose: Tuberculosis: 15 (ranged 15-20)mg/kg, max 1600mg/dose every 24h, or 20(ranged25-35)mg/kg, max 2400mg/dose 3 times per week | |
| Admin |  |

| **ISONIAZID** | |
|---|---|
| Prep | Tab 100mg, Syrup 100mg/5mL (EX) |
| Dose:<br>*Tuberculosis*: **Adult** (range: 4-6) 5mg/kg/dose, max 300mg/dose every 24hrs *or* (range: 8-12)10mg/kg/dose, max 900mg/dose 3 times per week; **Child** (range: 10-15) 10mg/kg/dose , max 300mg/dose every 24hrs. | |
| Admin |  Take on empty stomach, however, if it causes an upset stomach, it may be taken with food. |
| Notes | • Pyridoxine needs to be added. **Adult** 10-50mg every 24hrs; **Child** 5-10mg every 24hrs. |

| **PYRAZINAMIDE** | |
|---|---|
| Prep | Tab 500mg, Syrup 10mg/mL (EX) & 100mg/mL (EX) |
| Dose:<br>*Tuberculosis*: **Adult** (range: 20-30) 25mg/kg, max 2000mg/dose every 24hrs *or* (range: 30-40) 35mg/kg, max 3000mg/dose 3x/week; **Child** (range: 30-40) 35mg/kg/dose every 24hrs. | |

| **RIFAMPICIN** | |
|---|---|
| Prep | Cap 150mg & 300mg, Syrup 10mg/mL (EX), Syrup 25mg/mL (EX) |
| Dose:<br>*Tuberculosis*: **Adult** (range: 8-12) 10mg/kg/dose every 24hrs *or* 3x/week, max 600mg/dose; **Child** (range: 10-20) 15mg/kg/dose every 24hrs, max 600mg/dose.<br>*Post Exposure Prophylaxis for Meningitis: (N. Meningitidis)*: **Adult** 600mg every 12hrs x 2 days; *(Haemophilus Influenzae)*: **Adult** 600mg every 24hrs x 3 days; **Child** 20mg/kg (max 600mg) every 24hrs x 3 doses.<br>*Staphylococcal infection*: **Adult** 600mg daily to 900mg in 2-3 divided doses; **Child** 10-20mg/kg/dose every 24hrs. | |
| Admin |  |
| Notes | • To be used in combination of other drugs.<br>• Addition of rifampicin to vancomycin is NOT recommended for bacteremia or native valve infective endocarditis. |

| | |
|---|---|
| | • **S/E**: transient liver enzymes elevations, seek urgent medical advice if nausea/vomiting or jaundice; monitor liver function; red discoloration in urine/sputum/tears/soft contact lenses. |

## J05 ANTIVIRALS

### HUMAN IMMUNODEFICIENCY VIRUS (HIV)

### NEEDLE PRICK INJURY/POST EXPOSURE PROPHYLAXIS (PEP) REGIMENS

- During office hours, contact Infection Control Nurse/Doctor
- After office hours, go to Emergency Department. Medical Registrar On Call to decide on which regimen to start.
- Recommended ≥3 drugs regime
- Duration of therapy : 4 weeks
- Check for pregnancy / lactation status
- Antiemetic & antispasmodic may help reduce side effects and thus improve adherence
- Regimen for PEP is updated frequently. Pls consult Dr Petrick Periasamy for consultation (Infectious Disease Specialist)
- The regimen below are in PO (oral) formulation

| **Preferred Regimen** |
|---|
| Raltegravir (Isentress) 400 mg 2 times/day **plus** Tenofovir DF 300mg+Emtricitabine 200mg (Tenvir-Em) 1 tab once daily |

| **Alternative Regimen** |
|---|
| For low risk patients: Tenvir-Em, 1 tab once daily (alone) |
| For high risk patients: Lopinavir 200mg / Ritonavir 50mg (Kaletra) 2 tab 2 times/day, **plus** Tenvir-Em, 1 tab once daily **or** Lamivudine + Zidovudine (Combivir) 1 tab 2 times/day |

| **Alternative antiretroviral agents for use as PEP only with Expert Consultation** |
|---|
| Tenvir-Em, 1 tab once daily or Combivir, 1 tab 2 times/day **plus** Efavirenz (Stocrin) 600mg ON |

*Ref: Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis. David T. Kuhar, et.al. Infection Control & Hospital Epidemiology. 2013; 34(9):875-892.*

| **ACICLOVIR (ZOVIRAX, G)** | |
|---|---|
| Prep | Tab 200mg & 800mg, Susp 200mg/5ml, Inj 250mg, Cream 5% (10g) |
| Policy | (A : Specialists only) |
| Dose: *Herpes simplex or Varicella zoster infections*: IV: **Adult & Child>12yo :** 5mg/kg 3 times/day, **Child** 3mth-12yo: 250mg/m$^2$ 3 times/day. *Herpes encephalitis or immune-compromised*: IV: **Adult & Child >12yo**: 10mg/kg q8h; **Child** 3mth-12yo: 500mg/m$^2$ 3 times/day. *Varicella & herpes zoster treatment:* PO: **Adult & child>12yo**: 800mg 5 times/day, **Child 6-12yo:** 800mg 4 times/day, **Child<6yo**: refer BNFC. *Genital herpes simplex, treatment (1$^{st}$ episode)*: PO **: Adult:** 200mg 5 times/day or | |

| | |
|---|---|
| 400mg 3 times/day usually for 5days (400mg 5 times/day for 7-10days in immunocompromised or HIV positive); *treatment (recurrent):* PO: **Adult:** 800mg 3 times/day for 2 days or 200mg 5 times/day for 5days or 400mg 3 times daily for 3-5days (400mg 3times/day for 5-10 days in immunocompromised or HIV positive). *Non-Genital herpes simplex, treatment*: PO**: Adult & Child >2yo:** 200mg (400mg in immunocompromised or impaired absorption) 5 times/day usually for 5days. **Child 1mth-2yo**: Half adult dose. *Herpes simplex prophylaxis in immune-compromised*: PO: **Adult:** 200mg 4 times/day; double dose in severely immune-compromised (e.g post marrow transplant or impaired absorption. | |
| Admin | Reconstitute vial with 10mL WFI or NS. Further dilute for IV infusion in NS/D5 at concentration <5mg/ml over 1 hr.<br>PO: ±  |
| Notes | • Dose reduction in renal impairment.<br>• 5 times/day means ~4 hourly intervals, omit night time dose<br>• 4 times/day means ~6 hourly intervals<br>• Use ideal body weight in obese pt<br>• Infusion over 1hr to avoid precipitation in kidney, maintain adequate hydration, avoid concurrent nephrotoxic drugs |

| **DIDANOSINE (DDI/VIDEX/VIDEX-EC)** | |
|---|---|
| Prep<br>Policy | Oral powder 2g, Delayed Release Capsule 250mg & 400mg<br>A* : Infectious Disease Specialist. For HIV treatment only. |
| Dose:<br>Videx EC : PO: **Adult** <60 kg: 250 mg once daily, ≥60 kg 400 mg once daily. **Child**: 6-18 yo, 20 to <25 kg: 200 mg once daily; 25 to <60 kg, 250 mg once daily; at least 60 kg, 400 mg once daily. | |
| Admin |  |
| Notes | • Monitor for pancreatitis (may require discontinuation), lactic acidosis and severe hepatomegaly with steatosis. |

| **EFAVIRENZ (STOCRIN)** | |
|---|---|
| Prep<br>Policy | Cap 200mg, 600mg<br>(A*: Infectious Disease Specialist) |
| Dose: *Combination with Protease Inhibitor (PI) and/or Nucleoside Analogue Reverse Transcriptase Inhibitors (NRTIs)*: PO: **Adult**: 600mg once daily; **Adolescents & Children ≤17yo** & ≥40kg: 600mg; 32.5 to <40kg: 400mg, 25 to <32.5kg: 350mg, 20 to <25kg: 300mg, 15 to <20kg: 250mg, 13 to <15kg: 200mg once daily. | |
| Admin | ±  |
| Notes | • Non-nucleoside Reverse Transcriptase Inhibitor (NNRTI)<br>• Must be given in combination with other antiretroviral<br>• No adequate study in children <3yo or <13kg<br>• Monitor: rash, neuropsychiatric side effects (bedtime dosing might minimize for first 2-4 weeks of therapy or those continuously experiencing nervous system side effects e.g dizziness, somnolence<br>• Should not be used during pregnancy unless clearly necessary |

| | |
|---|---|
| | • Potential for serious/life threatening drug interactions |

| **ENTECAVIR (BARACLUDE)** | |
|---|---|
| Prep<br>Policy | Tab 0.5mg<br>(A* Gastroenterologist only) |
| Dose:<br>*Nucleoside-naïve*, **Adult**: 0.5mg once daily. *Lamivudine-refractory pts (h/o hepatitis B viremia while receiving Lamivudine therapy or known Lamivudine resistance*, **Adult**: 1mg once daily. | |
| Admin | For the 0.5mg tab: ±  |
| Notes | • Dose reduction in renal impairment.<br>• Safety & efficacy in <16yo have not been established. |

| **GANCICLOVIR (CYMEVENE)** | |
|---|---|
| Prep<br>Policy | Inj 250mg, Inj 500mg in 10ml (Na~2mmol/vial), Cap 250mg<br>(A*: ONLY for CMV disease in the immunocompromised) |
| *Cytomegalovirus (CMV) infection treatment: (HIV infection, CMV colitis or esophagitis),* **Adult**: IV 5mg/kg 2times/day for 21-28 days or until signs & symptoms has resolved, maintenance generally not necessary. *CMV retinitis induction treatment*, **Adult**: IV 5mg/kg 2times/day for 14-21 days, *maintenance*: IV 5mg/kg once daily on 7 days per week or 6mg/kg once daily on 5 days per week. | |
| Admin | • Reconstitute with 10mL WFI. Further dilute with D5/NS usually 100mL, at max concentration 10mg/mL. IV Infusion over 1 hr.<br>• Powder for IV Infusion can be stored at room temperature <40°C.<br>• Reconstituted solution in the vial is stable at room temperature (<25 °C) for 12 hours. It should not be refrigerated since a precipitate may form.<br>• The infusion solution should be used as soon as possible and within 24 hours of dilution. The infusion solution should be refrigerated (2-8 °C).<br>• Freezing is not recommended. |
| Notes | • Dose reduction in renal impairment.<br>• Potential teratogen & carcinogen in humans, caution in handling. |

| **LAMIVUDINE (3TC)** | |
|---|---|
| Prep<br>Policy | Tab 150mg (3TC)<br>Tab 150mg: A*: Infectious Disease Specialist). Free for staff that has needle prick injury. |
| Dose:<br>*Treatment of HIV (3TC tab)*, **Adult & adolescent ≥30kg**: 300mg/day in 1 or 2 div doses. **Child >3mth & weight 21-30kg**: 75mg (½ of 150mg tab) morning, 150mg evening; **weight 14-21kg**: 75mg 2 times/day. | |
| Admin | ±  |
| Notes | • Nucleoside Reverse Transcriptase Inhibitor (NRTI)<br>• Limited data for child <3mth<br>• Dose reduction in renal impairment<br>• Minimal toxicity & drug interactions |

| **LAMIVUDINE + ZIDOVUDINE (COMBIVIR)** | |
|---|---|
| Prep<br>Policy | Tab Lamivudine 150mg + Zidovudine 300mg<br>(A*: Infectious Disease Specialist) |
| Dose: **Adult & adolescent ≥ 30kg**: 1 tab 2 times/day. **Child 21-30kg**: ½ tab morning & 1 tab evening; **14-21kg**: ½ tab 2 times/day. | |
| Admin | ±  |
| Notes | • Both NRTI<br>• For child <14kg, renal/severe liver impairment: take as separate formulations. |

| **LAMIVUDINE + ABACAVIR (KIVEXA)** | |
|---|---|
| Prep<br>Policy | Tab Lamivudine 300mg + Abacavir 600mg<br>A*: Infectious Disease Specialist only. For patients who are unable to tolerate Combivir and Tenvir-EM. |
| Dose: **Adult & adolescent**: 1 tab once daily | |
| Admin | ±  |
| Notes | • Both NRTI<br>• Not be administered to adults or adolescents <40kg (It is a fixed dose tablet).<br>• Abacavir-potential for ABC hypersensitivity reaction (e.g rash, fever, n&v, abdominal pain, respi symptoms) in patients with HLA-B*5701, require testing before use. |

| **NEVIRAPINE (VIRAMUNE-G)** | |
|---|---|
| Prep<br>Policy | Tab Nevirapine 200mg<br>(A* : Infectious Disease Specialist) |
| Dose: *HIV infection* **≥ 16yo**: 200mg once daily for 14 days (to lessen the frequency of rash), then 200mg 2 times/day. **Children** (by BSA): 150mg/$m^2$ once daily for 2 wks, followed by 150mg/$m^2$ 2 times/day. **Children** (by kg) <8yo: 4mg/kg once daily for 2 wks, followed by 7mg/kg/dose 2 times/day; ≥ 8yo, 4mg/kg once daily for 2 wks, followed by 4mg/kg 2 times/day. Max. 400mg/day for any patient. | |
| Admin | ±  |
| Notes | • First 6-18 wks are critical period which need close monitoring of severe & life threatening skin reactions (Steven Johnson Syndrome, Toxic Epidermal Necrolysis) or serious hepatitis/hepatic failure. Women & those with higher CD4+ cell counts are at increased risk of hepatic adverse events.<br>• Strictly adhere to the dosage especially the 14 days lead-in period.<br>• Once treatment interrupted >7 days, should restart the recommended regimen.<br>• 16yo with <50kg can use suspension (NF item) as it can be dosed according to body weight. |

| **OSELTAMIVIR (TAMIFLU-G)** | |
|---|---|
| Prep | Cap75mg, 12,15,16mg/ml suspension |
| Dose: *Treatment of Influenza A&B*, **Adult & child ≥13yo:** 75mg, **Child:** 1-13yo, >40kg: | |

| | |
|---|---|
| 75mg, 23-40kg: 60mg, 15-23kg: 45mg, <15kg: 30mg, 2 times/day for 5 days .*Post exposure prophylaxis*, **Adult & child ≥13yo**: 75mg, **Child:** 1-13yo, >40kg: 75mg, 23-40kg: 60mg, 15-23kg: 45mg, <15kg: 30mg, once daily for at least 10 days and up to 6 weeks during an epidemic. | |
| Admin | ±  |
| Notes | • Begin as soon as possible after the onset of symptoms/exposure (within 48hrs).<br>• Dose reduction in renal impairment |

| **RALTEGRAVIR (ISENTRESS)** | |
|---|---|
| Prep | Tab 400mg (A : Infectious Disease Specialist only) |
| Dose: *HIV infection* **≥12yo**: 400mg 2 times/day | |
| Admin | ±  |
| Notes | • Intergrase strand transfer inhibitor (INSTI)<br>• Safety & efficacy in <2yo has not been established.<br>• Use in combination with other antiretroviral<br>• Not to chew, crush or split tablet<br>• Monitor: Insomnia, nausea, fatigue, headache, severe skin & hypersensitivity reaction<br>• PEP regime: refer table above. |

| **STAVUDINE+LAMIVUDINE+NEVIRAPINE (SLN30)** | |
|---|---|
| Prep<br>Policy | Tab Stavudine 30mg+Lamivudine 150mg+Nevirapine200mg<br>A*: Infectious Disease Specialist |
| Dose: *HIV infection,* **Adult**: 1 tab 2 times/day | |
| Admin | ±  |
| Notes | • NRTI+NRTI+NNRTI<br>• SLN tablet should not be administered to patients who have just initiated therapy with Nevirapine.<br>• SLN tablet should not be prescribed for those require dosage adjustment such as low kg (<50kg).<br>• SLN tablet should be discontinued if patients experiencing severe rash |

| **STAVUDINE (D4T/ZERIT)** | |
|---|---|
| Prep<br>Policy | Cap 30mg & 40mg<br>(A*: Infectious Disease Specialist) |
| Dose: *HIV infection*, **Adult** <60kg: 30mg 2 times/day, ≥60kg 40mg 2 times/day; **Adolescents, children & infants** >3mths: <30kg: 1mg/kg 2 times/day, ≥30kg: adult dosing. | |
| Admin | Best on empty stomach (1hr before meal) or with light meal<br>May also be administered by carefully opening the hard capsule and mixing the contents with food. |
| Notes | • NRTI<br>• Renal dose adjustment needed<br>• Monitor: GI side effects (diarrhea, nausea), hepatotoxicity, neurologic |

| | |
|---|---|
| | symptoms (e.g peripheral neuropathy), pancreatitis |

| **TELBIVUDINE (SEBIVO)** | |
|---|---|
| Prep<br>Policy | Tab 600mg<br>(A*Gastroenterologist only) |
| Dose: Chronic hepatitis B, **Adult**: 600mg once daily | |
| Admin | ±  |
| Notes | • Renal dose adjustment needed<br>• Not recommended for use in children (<16yo)<br>• Monitor liver function<br>• Advise patient to promptly report unexplained muscle pain, tenderness, weakness, numbness, tingling or burning sensations |

| **TENOFOVIR DISOPROXIL FUMARATE (TENVIR®)** | |
|---|---|
| Prep<br>Policy | Tab 300mg<br>A*: Gastroenterologists only |
| Dose:<br>*Chronic Hepatitis B in adults*: 300mg daily. | |
| Admin | ±  |

| **TENOFOVIR DISOPROXIL FUMARATE+EMTRICITABINE (TENVIR-EM)** | |
|---|---|
| Prep<br><br>Policy | Tab tenofovir disoproxil fumarate 300mg (=tenofovir disoproxil 245mg) +emtricitabine 200mg<br>(A* Infectious Disease Specialist only) |
| Dose: HIV treatment: One tab once daily | |
| Admin | ±  |
| Notes | • Both NRTI<br>• Renal dose adjustment needed<br>• Not recommended for <18yo<br>• Monitor for lactic acidosis and severe hepatomegaly with steatosis |

| **VALGANCICLOVIR (VALCYTE)** | |
|---|---|
| Prep | Tab 450mg (A*Ophthalmologist, Nephrologist, Hematologist) |
| Dose: *CMV retinitis treatment, induction*: 900mg 2 times/day for 21 days; *maintenance*: 900mg once daily (patients whose retinitis worsens may repeat induction treatment).<br>*Prevention of CMV disease in kidney transplantation*: 900mg once daily starting within 10 days of transplantation for 100 days. | |
| Admin |  |
| Notes | • Renal dose adjustment needed<br>• Prolonged induction treatment may increase the risk of bone marrow toxicity.<br>• Tablets should not be broken or crushed. It is potential teratogen and carcinogen in humans, caution when handling broken tablets. |

| **ZIDOVUDINE [AZIDOTHYMIDINE/AZT] (RETROVIR)** | |
|---|---|
| Prep<br>Policy | Cap 100mg, Syrup Sugar-free 50mg/5mL (200mL), Inj 10mg/mL (20mL) (A* Dr. Petrick Periyasamy, Infectious Disease Unit): ONLY for HIV infection and needle prick injury) |
| Dose: *Combination with other anti-retroviral agents for HIV,* **Adult**, PO: 500 or 600mg/day in 2 or 3 divided doses; 3months – 12yo: 360-480mg/m$^2$/day in 3-4 divided doses (max. 200mg every 6 hrs). *Patients temporarily unable to take PO*, **Adult:** IV infusion: 0.8-1mg/kg every 4hrs (=PO 1.2-1.5mg/kg every 4hrs); **Infant ≥6wks & child <12yo**: IV infusion 120mg/m$^2$ every 6hrs. *Prevention of maternal-fetal HIV transmission*, >14wks of pregnancy: PO 100mg 5 times/day until labour starts, during labour& delivery: IV 2mg/kg (total body weight) over 1hr, follow by continuous infusion at 1mg/kg/hr (total body weight) until umbilical cord is clamped; If caesarean, IV infusion started 4hrs before operation. **Newborn infant**: starting within 12 hrs after birth & continue until 6wks old: PO 2mg/kg every 6 hrs or IV 1.5mg/kg (infuse over 30mins) every 6 hrs. | |
| Admin | PO: ±  <br>IV: Dilute with D5 to final concentration of 2mg/mL or 4 mg/mL(max).<br>MUST be given by slow IV infusion, infuse over 1 hr when use for HIV treatment in adult. |
| Notes | • NRTI<br>• Dose adjustment in patients with haematological adverse reactions (low haemoglobin/neutrophil), renal or hepatic impairment<br>• Common side effects: nausea, vomit, headache, insomnia, fatigue<br>• Use IV route only until PO can be administered<br>• For needle prick injury: refer table above. |

| **LOPINAVIR + RITONAVIR (KALETRA)** | |
|---|---|
| Prep | Tab Lopinavir 200mg + Ritonavir 50mg F/C (FOC for staff for needle prick injury otherwise Non Formulary item) |
| Dose: *For HIV post exposure prophylaxis or HIV treatment (in combination with other antiretroviral agents) for therapy naïve or experienced patients*, **Adult**: Kaletra 400/100mg (2 tab of 200/50mg) 2 times/day. | |
| Admin | ±  |
| Notes | • Protease Inhibitor (PI)<br>• Monitor: GI intolerance (nausea, vomiting, diarrhea are common), PR & QT prolongation. Potential for serious/life threatening drug interactions |

## J 06 IMMUNE SERA & IMMUNOGLOBULINS

- If the snake species is identified (use monovalent antivenom)

- If the snake species is unidentified (use Neuro-polyvalent or Hemato-polyvalent antivenom)
- Dose: Children and Adult are given the same dose.
- Administration:
  Method: Intravenous infusion: Reconstitute freeze-dried antivenom with the solution supplied or 10ml WFI. Gently swirl and never shake to dissolve the freeze-dried antivenom.Further dilute with 5-10ml of NS or D5% per kg body weight for children, or 250-500ml NS or D5% in adult). Infuse the antivenom mixture starting slow (1 to 2 ml/min) over 10-15 min then increased to a higher rate if no reaction to complete within a period of one hour or earlier.
- To provide quick response to signs and symptoms of allergic reaction:
  - Adrenaline must be drawn up in readiness **before** antivenom is administered (IM 0.5 mg for adults; IM 0.01mg/kg body weight for children i.e. 0.1% solutions, 1 in 1,000 dilution, 1mg/ml).
  - The person administering the antivenom must remain with the patient throughout the administration process with the crash trolley and resuscitation team in readiness.
  - Closely observe patient during and for at least one hour AFTER completion of intravenous infusion. Serially chart vital signs and clinical progression.

*Ref: SNAKEBITE MANAGEMENT GUIDE FOR HEALTHCARE PROVIDERS IN MALAYSIA, prepared by Dr Ahmad Khaldun Ismail, UKMMC Emergency Department, October 2013.*

| **ANTIVENENE INJ, MONOCLED COBRA, *NAJA KAOUTHIA* (PURIFIED EQUINE $FAB_2$ IMMUNOGLOBULIN)** | |
|---|---|
| Prep | Inj 10ml/vial |
| Dose: Monocle Cobra antivenin: initial dose 100ml/10 vials (slow IV infusion). Subsequent dose every 1 to 2 hr according to clinical symptoms. | |
| Admin | Reconstitute the freeze-dried antivenin with the solution supplied or 10ml WFI. Further dilute with NS or D5 for slow IV infusion. |
| Notes | • **Monovalent antivenom**–Neutralization of *Naja kaouthia* (Monocled Cobra) venom. Each ml neutralizes 0.6mg of Monocled Cobra venom |

| **ANTIVENENE INJ, MALAYAN PIT VIPER, *CALLOSELASMA RHODOSTOMA* (PURIFIED EQUINE $FAB_2$ IMMUNOGLOBULIN)** | |
|---|---|
| Prep | Inj 10 ml/vial |
| Dose: Malayan Pit Viper antivenin:initial dose 40ml/4 vials of reconstituted antivenin (slow IV infusion). Subsequent dose every 6 hr according to clinical symptoms and investigations. | |
| Admin | Reconstitute the freeze-dried antivenin with the solution supplied or 10ml WFI. Further dilute with NS or D5 for slow IV infusion. |
| Notes | • **Monovalent antivenom** -Neutralization of Malayan Pit Viper (*Calloselasma rhodostoma*) venom. Each ml neutralizes 1.6mg of Malayan Pit Viper (*Calloselasma rhodostoma*) venom |

| **HEMATOPOLYVALENT SNAKE ANTIVENIN** |
|---|
| Prep \| Inj 10 ml/vial, Unregistered product |
| Dose: Hematotoxic snake antivenin: initial dose, 30ml/3 vials of reconstituted serum (slow IV infusion). If active bleeding still persist, the second dose can be repeated 2hrs |

| | |
|---|---|
| or even earlier after the initial dose. Further dose can be repeated every 6 hr according to clinical symptoms and investigations. | |
| Admin | Dilute with 10mL WFI, gently swirl until serum became clear colourless or pale yellow liquid. |
| Notes | **Polyvalent antivenom:**<br>Neutralization of a range of hematotoxic snake venom. Each mL neutralizes 0.6mg Russell's Viper (*Daboia siamensis*) venom; 0.7mg Green Pit Viper (*Trimeresurus albolabris*) venom; 1.6mg Malayan Pit Viper (*Calloselasma rhodostoma*) venom. |

| **ANTI-D (RHO) HUMAN IMMUNOGLOBULIN (RHOPHYLAC)** | |
|---|---|
| Prep | Inj 300mcg(1500IU)/2mL |
| *Suppression of Rh Isoimmunization:* IV or IM: Pregnancy and obstetric conditions:<br>o Rh-incompatible pregnancy – 1500 IU (300 mcg) at Week 28-30 of gestation and another 1500 IU (300 mcg) within 72 hours of birth of an Rh0(D)-positive baby<br>o Obstetric complications/invasive procedures – 1500 IU (300 mcg) within 72 hours of the at-risk event<br>o Excessive fetomaternal hemorrhage – 1500 IU (300 mcg) within 72 hours plus 100 IU (20 mcg) per mL fetal RBCs >15 mL (excess transplacental bleeding quantified) or another 1500 IU (300 mcg) (excess transplacental bleeding not quantified)<br>o Exposure to >15 mL of Rh0(D)-positive RBCs (in postpartum prophylaxis and obstetric complications/invasive procedures) – Increase the dose based on guidelines for excessive fetomaternal hemorrhage<br>*Incompatible transfusions*: 100 IU (20 mcg) per 2 mL transfused blood or per 1 mL erythrocyte concentrate within 72 hours of exposure | |
| Admin | IV or IM. In case of haemorrhagic disorders where IM is contraindicated, IV should be given. If large doses (>5ml) are required and IM is chosen, it is advisable to administer them in divided doses at different sites. |
| Notes | • Postpartum dose MUST be given even when antepartum prophylaxis has been administered. |

| **HEPATITIS B IMMUNE GLOBULIN, HUMAN (HEPABIG)** | |
|---|---|
| Prep | 100iu/0.5ml or 200iu/1ml |
| Dose: *Prophylaxis of Hepatitis B after exposed to Hepatitis B virus (e.g: needle-stick injury)*, **Adult**: IM 1000-2000iu as single dose within 48 hours of exposure. If necessary, the dose should be increased or repeated; **Child**: 32-48iu/kg; **Neonate**: IM 100-200iu within 5 days after birth (preferably within 48 hrs), booster dose 32-48 iu/kg, between 2 and 3 months after 1st dose. | |
| Admin | IM |
| Notes | • Hepatitis B vaccine may be given at the same time, but at a different site.<br>• Store <10$^0$C, without freezing. |

| **HUMAN ANTI TETANUS IMMUNOGLOBULIN (SERO-TET)** | |
|---|---|
| Prep | 250iu/1ml |
| Dose: *Prophylaxis* IM: **Adult & Children**: 250iu (1ml), up to 500iu if wounds >24 hours/severe contaminated wounds/crushing injuries. *Treatment*: not less than 5000iu | |

| | |
|---|---|
| (20ml). | |
| Admin | IM only |
| Notes | • Passive immunization against Tetanus infection caused by Clostridium Tetani<br>• Store <10$^0$C, without freezing. |

| **NEURO POLYVALENT SNAKE ANTIVENIN** | |
|---|---|
| Prep | 10ml Unregistered product |
| Dose: Initial dose, 50ml/5vials (if kraits were suspected) or 100ml/10 vials (if cobras were suspected) of reconstituted serum (slow IV infusion <1ml/min). If symptoms still persist, the second dose should be repeated 2hrs or even earlier after the initial dose. Further dose should be repeated every 6 hr according to clinical symptoms. | |
| Admin | Reconstitute with 10mL WFI, gently swirl until serum became clear colourless or pale yellow liquid. |
| Notes | • **Polyvalent Antivenom:**<br>Neutralization of a range of neurotoxic snake venom. Each mL neutralizes 0.4mg Malayan Krait (*Bungarus candidus*) venom; 0.6mg Banded Krait (*Bungarus fasciatus*) venom; 0.6mg Monocled Cobra (*Naja kaouthia*)venom; 0.8mgKing Cobra venom (*Ophiophagus hannah*). |

| **PALIVIZUMAB (SYNAGIS)** | |
|---|---|
| Prep | 100MG, A*: Neonatologist only |
| Dose: *Prevention of serious Respiratory Syncytial Virus (RSV) disease in high risk infant*: IM 15mg/kg monthly, beginning prior to and continuing monthly throughout the RSV season. | |
| Admin | IM only on anterolateral aspect of thigh. Reconstitute a 100mg vial with 1mL WFI. Gently swirl for 30 seconds to avoid foaming, let it stand for 20 min until solution clarifies (DO NOT SHAKE VIAL). Stability after reconstitution: 6 hrs. |
| Notes | • Store at 2-8$^0$C |

| **IMMUNE GLOBULIN SUBCUTANEOUS 20% (HIZENTRA®)** | |
|---|---|
| Prep<br>Policy | Inj 1mg/5mL<br>A*: Paeds immunologists only. For 4 patients only at any one time. |
| Dose:<br>*Replacement therapy in adult and children. Congenital agammaglobulinemia and hypogammaglobulinemia*: SC: weekly or biweekly injection<br>To calculate initial weekly dose of Hizentra,<br>Initial Hizentra dose = previous IVIG dose(g) ÷ no of weeks between IVIG doses × 1.53<br>To convert the Hizentra dose (grams to mL), multiply the calculated dose (g) by 5 | |
| Admin | For Subcutaneous Infusion only. For weekly dose, use up to 4 sites simultaneously or up to 12 sites consecutively per infusion. For bi weekly dosing, increase the number of injection sites. Should be at least 2 inches aprt. Change actual site of injection with weekly dose.<br>Volume-For first infusion, do not > 15mL per injection site. May increase |

| | |
|---|---|
| | volume to 20mL per site after the 4th infusion and then to 25mL per site as tolerated<br>Rate-Initially, flow rate is 15mL/hr/site. For subsequent infusions, flow rate may increase to 25mL/hr/site. |
| Notes | • Single-use only.<br>• To convert Hizentra dose ( in grams) to mL, multiply the calculated dose ( in grams) by 5. |

| **HUMAN IMMUNOGLOBULIN (IVIG-G)** | |
|---|---|
| Prep | **NON- FORMULARY ITEM ( MUST HAVE PENGARAH'S APPROVAL ie JKTU FORM AND PAY DEPOSIT BEFORE PHARMACY CAN SUPPLY)**<br>2.5 g/50mL<br>1) Refractory ITP/ITP in Pregnancy 2) Kawasaki Disease<br>3) Guillain Bare 4) SLE in severe disease manifestations (e.g severe SLE infection, Lupus Nephritis grade 3,4, & 5 (confirmed after biopsy) 5) For Toxic Epidermal Necrolysis (TEN) (A*:Dermatologists, 2 patients / year)<br>• For government servant from PPUKM : FREE for staffs for selected indications only.<br>• For government servant from other centres, please PAY deposit. Bring Guarantee Letter to *Kaunter Kewangan* who will inform if GL covers for IVIG or not. If it covers, patient gets refund for deposit paid.<br>• PAY IN FULL (deposit of RM500 before supply) for a) non government servants b) indications apart from those listed above. *(Policies are subject to change, pls call in-patient pharmacy ext 5814, drug info. ext 5401 or for 'after office hours': Emergency Department, ED Pharmacy ext 7703/7971).* |
| Dose: *Idiopathic Thrombocytopenic Purpura (ITP)*, 0.8-1g/kg as a single dose, sometimes repeated 3 days later. A dose of 0.4g/kg may be given for 2-5days. *Guillain Barre Syndrome* 0.4g/kg/day for 3-7 days. *Kawasaki Disease* 1.6-2g/kg split into several doses over 2-5 days or 2g/kg as a single dose. *Toxic Epidermal Necrolysis (TEN)* 0.5gram/kg in 3 divided dose (Total dose divided by 3 days). | |
| Admin | First 30min, infuse at 0.01-0.02mL/kg/min. Gradually increase to 0.04mL/kg/min up to max 3mL/min. May reduce the rate if adverse effects are present. |
| Notes | • Dose & Infusion rate varies between different manufacturers, please check the product insert.<br>• Keep at room temperature for at least 2hrs before infusion.<br>• Slow initial infusion rate to reduce risk of side effects.<br>• May interfere with immunisation e.g measles, rubella, mumps, varicella & yellow fever for at least 6 wks and up to 3 mths. In the case of measles, impairment may last for up to a year. |

## J07 VACCINE

- Special warnings: Postpone vaccination in acute severe febrile illness. Presence of minor infection is not a contra-indication.

- Vacinnee should always be monitored for 30 minutes post immunization in case of anaphylaxis
- It may be expected that patients receiving immunosuppressive therapy ( corticosteroid, cytotoxic or radiotherapy) or patients with immunodeficiency may not achieve an adequate response.

| **BACILLUS CALMETTE-GUERIN (BCG) VACCINE** | |
|---|---|
| Prep | Live bacteria 50 mcg BCG/1mL |
| Dose:<br>Intradermal: Adult: 0.1mL (50mcg/dose); Infant < 12 month old: 0.05mL | |
| Notes | • Do not give BCG within 4 weeks of another live vaccine<br>• Stability after reconstitution: 6 hours in 2-8 celcius. Protect from light. |

| **DIPHTHERIA-TETANUS-PERTUSSIS, INACTIVATED POLIO VACCINE (INFANRIX-IPV)** | |
|---|---|
| Prep | Combined diphtheria-tetanus-acellular pertussis, inactivated polio vaccine (Inactivated) |
| Dose:<br>*Active immunization for infants > 2 mths:* 3 doses in first year of life, at least 1 mth interval apart. *Booster for children previously immunized with DTP and Polio antigens (data up to 13 yr old):* If primary course completed before 6 mths, booster can be given in 2nd yr of life, at least 6 mths apart from last dose. | |
| Admin | Intramuscular. Infants : anterolacteral aspect of thigh; older children : deltoid. Caution in pts with thrombocytopenia or bleeding disorder ( may cause bleeding with IM Inj)<br>Shake well before use to suspend white sediment formed during storage. |
| Notes | • Contraindicated if child experienced encephalopathy of unknown aetiology within 7 days following previous vaccination with pertussis. |

| **HAEMOPHILUS INFLUENZA TYPE B (Hib) Vaccine (HIBERIX)** | |
|---|---|
| Prep | Hib Polysaccharide vaccine, bound to tetanus toxoid |
| Dose:<br>For active immunization of infants from 6 wks agst disease caused by Hib: 3 doses in first 6 mths of life. Booster can be given in 2nd yr of life.<br>*If previously unvaccinated:* **at age 6-12 mths,** may give 2 vaccines at least 1 mth interval apart, followed by booster in 2nd yr of life. **At age 1-5 yrs**, give one dose of vaccine. | |
| Admin | Intramuscular or Sub-Cutanous ( if patient has thrombocytopenia or bleeding disorders)<br>Can be administered simultaneously or at any time before or after a different inactivated or live vaccine.<br>Can be mixed in the same syringe with GSK vaccines Infanrix ( DTPa vaccine). |
| Notes | • Stability data in out-of-range temperatures:- a) lyophilized powder and reconstituted product: stored at 37°C for up to 24 mths; b) reconstituted product : stored at 21°C for up to 5 days |

| **HEPATITIS B VACCINE (EUVAX-B)** | |
|---|---|
| Prep | Recombinant hepatitis B vaccine 10mcg/0.5mL (Paeds) , 20mcg/1mL (Adults: |

| | |
|---|---|
| Policy | for staff only-obtain from Infection Control Unit) |
| Dose:<br>**Neonate-15 yrs old**: IM 0.5mL ; Adult > 16 yrs old: IM 1.0mL. 1st dose at elected date. 2nd dose: 1 mth after 1st dose. 3rd dose: 6 mths after 1st dose. | |
| Notes | • No need booster as long as 15 yrs. Additional 12 mths booster may be needed in hemodialysis or immunodeficient patients. |

| **INFLUENZA VACCINE (VAXIGRIP)** | |
|---|---|
| Prep | Split virion, inactivated influenza vaccine |
| Dose: IM or SC: **Adult** 0.5mL ; **Children from 36 mths and older** 0.5mL ; **Children from 6 mths – 35 mths** : 0.25mL | |
| Notes | • Vaxigrip can be given at same time as other vaccines by using separate limb |

| **MEASLES, MUMPS AND RUBELLA-MMR VACCINE (PRIORIX)** | |
|---|---|
| Prep | Lyophilised measles, mumps and rubella vaccine, 0.5mL |
| Dose: Active immunization agst measles, mumps and rubella. SC or IM 0.5mL | |
| Admin | SC and SC Injection |
| Notes | • Pregnancy shd be avoided 3 mths after vaccination. Alcohol and disinfecting agents must evaporate from skin before injection of vaccine as they can inactivate attenuated viruses in vaccine. Limited protection agst measles may be obtained by vaccination up to 72 hrs after exposure to natural measles. Tuberculin test should not be performed for 4-6 wks after vaccination to avoid false negative results. Priorix can be given same time as live attenuated varicella vaccine. An interval of at least 1 mth shd be left betwn both vaccinations. |

| **MENINGOCOCCAL VACCINE (MENCEVAX ACWY)** | |
|---|---|
| Prep<br>Policy | 50 mcg polysaccharide serogroups A, C, $W_{135}$ and Y (0.5mL)<br>Only for staff going for haj and umrah. To be supplied through the Infection Control Unit. |
| Dose:<br>Active immunization of children >2 yrs against meningococcal disease caused by meningococci of serogroups A, C, $W_{135}$ and Y. SC 0.5mL | |
| Admin | Shd NOT be given intravascularly. |
| Notes | • Adults and child > 5 yrs, immunity will persist for up to 3 years. If < 5 yrs, may reconsider revaccination after 2-3 yrs if remain at high risk. |

| **PNEUMOCOCCAL VACCINE (PNEUMO 23)** | |
|---|---|
| Prep<br>Policy | Polysaccharide pneumococcal vaccine (0.5mL)<br>Free for patients from a) Respiratory Clinic and b) For prevention of pneumococcal infections in high risk subjects from the age of 2 yrs including patients with a history of splenectomy or scheduled splenectomy.<br>Free for staff but to get the injection from Unit Kawalan Infeksi for those going for Haji. |
| Dose:<br>*Indicated for subjects > 2 yrs with increased risk of pneumococcal infection:* IM or SC | |

| 0.5mL | |
|---|---|
| Admin | IM and SC |
| Notes | • Vaccine should be preferably given two weeks before starting any treatment which reduces immunity ( chemotherapy) or before splenectomy. Pneumo 23 is generally not recommended if vaccinated within last 3 years. ( Check CDC for official recommendations) |

| **RUBELLA VACCINE** | |
|---|---|
| Prep | Live, attenuated Rubella Inj 1 dose/ 0.5mL (A: For staffs only) |
| Dose:<br>Administer 0.5mL by deep subcutaneous injection into upper arm. | |
| Notes | • If vaccine is not used immediately after reconstitution, it should be stored in the dark at 2-8 celcius no longer than 8 hrs |

# CLASS L. ANTINEOPLASTIC AND IMMUNOMODULATING AGENTS

## L01 ANTINEOPLASTIC

- **All antineoplastics are hazardous and requires precaution when handling**
- **Alkylating Agents** can cause urothelial toxicity (give MESNA for prophylaxis).
- **Cytotoxic Antibiotics:** Caution in handling (irritant to tissues), and hepatic/renal impairment.
- **Antimetabolites** – Methotrexate causes myelosuppression, mucositis and rarely pneumonitis (consider folinic acid rescue); it is contraindicated in severe renal/hepatic impairment.
- **Etoposide** – May cause anaphylactic- like reactions manifested chills, fever, tachycardia, bronchospasm, dyspnea and hypotension.
- **Platinum Compounds** – May cause nephrotoxicity, myelotoxicity, ototoxicity, peripheral neuropathy and hypomagnesaemia, as well as severe nausea and vomiting.
- **Taxane** – Docetaxel may cause hypersensitivity reaction eg flushing and localised cutaneous reaction.
- **Vinca Alkaloids** – May cause neurological toxicity e.g. peripheral paraesthesia, loss of deep tendon reflexes, abdominal pain and constipation; also, myelosuppression and alopecia.
- For information on the reconstitution of cytotoxic chemotherapy please contact the CDR Pharmacist at ext 6701 or Drug Information (ext. 5401).

***Irritant : At high concentration and volume can become vesicant***

***All cytotoxic tablets or capsules should be administered as a whole, not recommended to be crushed or split. Refer Pharmacist for further information.***

| **ACTINOMYCIN D (DACTINOMYCIN) [Cytotoxic antibiotic]** | |
|---|---|
| Prep | Inj 500mcg |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IV only |
| Notes | Reconstitute with 1.1 ml SWFI<br>Store below 25°C |

| **BLEOMYCIN SULPHATE [Cytotoxic Antibiotics]** | |
|---|---|
| Prep | Inj 15mg (15units/vial or 15000iu/vial). 1 unit=1mg, 1unit=1000iu. |
| Dose and frequency according to indication and drug regimen used. | |
| Admin | For IV, IM, SC. Vein irritant. |
| Notes | • Reconstituted vial 15mg/5mL Normal Saline (NS). After dilution, keep as Fridge Item. Do not reconstitute with D5% containing diluents.<br>• Pulmonary fibrosis likely when total doses greater than 400 units<br>• Test dose: Administer 1-2 units of bleomycin before the first 1-2 doses; monitor vital signs every 15 minutes; wait a minimum of 1 hour before |

| | |
|---|---|
| | administering the remaining dose; if no acute reaction occurs, then the regular dosage schedule may be followed. May produce false negatives. |

| **BUSULPHAN (MYLERAN, BUSULFEX) [Alkylating Agent]** | |
|---|---|
| Prep | Inj 60mg/10mL (A* Hematologists only: 10 patients/year), Tab 2mg |
| Dose:<br>*Chronic myeloid leukaemia: Induction of remission:* PO: 60mcg/kg daily up to max 4mg; maintenance 0.5-2mg daily. IV: 0.8 mg/kg (IBW or actual BW, whichever is lower. For obese patients, adjusted ideal body weight is recommended) every 6 hours for 4 days (total 16 doses). | |
| Admin | IV should be administered over 2 hrs via central venous line.<br>PO: ±  Take with chilled liquid. |
| Notes | • Diluted injection in NS/D5 is stable at RT (25°C) for up to 8 hrs, in NS stable in fridge (2-8 °C) for up to 12 hrs. Vein irritant<br>• Unopened vials store in fridge (2°-8°C).<br>• Tablet: store below 25°C. |

| **CAPECITABINE (XELODA) [Antimetabolite Agent]** | |
|---|---|
| Prep<br>Policy | Tab 500 mg (A*Oncologists only: 10 patients/ RM60,000.00 per year).<br>Indicated for: 1) Colon cancer 2) Gastric cancer |
| Dose:<br>PO: 1000-1250 mg/m² 2 times/day (morning and evening) for 2 weeks followed by a 7-day rest period. Refer individual protocol | |
| Admin | 30 mins after  |

| **CARBOPLATIN [Alkylating Agent: Platinum Compounds]** | |
|---|---|
| Prep | Inj 450mg/45mL |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IV Infusion only. Vein irritant |
| Notes | • Store below 25°C. Protect from light. |

| **CARMUSTINE (BICNU)[Alkylating Agent]** | |
|---|---|
| Prep | Inj 100mg (A*: For BMT cases only) |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | Infuse over 1 to 2 hours. High dose at least 2 hrs. Vein irritant |
| Notes | • Unopened vials store in fridge (2-8° C).<br>• Reconstitute with diluent provided<br>• Solution stable for 8hrs in RT and 48hrs in fridge. Protect from light |

| **CHLORAMBUCIL (LEUKERAN) [Alkylating Agent]** | |
|---|---|
| Prep | Tab 2mg |
| Dose:<br>Dose and frequency according to indications and drug regimen used. | |
| Admin |  <br>Swallow whole, do not chew or crush. Handle as cytotoxic drug. |

| | |
|---|---|
| Notes | • Store in fridge (2°-8°C) |

| **CISPLATIN [Alkylating Agent: Platinum Compounds]** | |
|---|---|
| Prep | Inj 50mg/50mL |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IV infusion |
| Notes | • Protect from light. Store between 15°C and 25°C. Do not refrigerate. |

| **CRISANTASPACE (ERWINASE)[2/3]** | |
|---|---|
| Prep | Inj 10000 IU/ vial |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IM |
| Notes | • Store in fridge (2-8$^{o}$C).<br>• Reconstitute with 2 mL NS. |

| **CYCLOPHOSPHAMIDE (ENDOXAN) [Alkylating Agent][1]** | |
|---|---|
| Prep | Tab 50mg, Inj 1000mg |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | Oral:  Do not take at bedtime to minimize bladder irritation.<br>IV Bolus, IV Infusion: Doses 7500mg-2 gram may be given over 20-30 min. Vein irritant |
| Notes | • Reconstituted vial 1000mg/50mL SWFI<br>• Use MESNA in high dose therapy (ie. > than 2 grams). |

| **CYTARABINE (CYTOSAR-G) [Antimetabolites][1]** | |
|---|---|
| Prep | Inj 100mg/mL, 1000mg/10mL |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | SC, IV bolus, IV Infusion, Intrathecal (IT). Must be diluted appropriately for IT. Vein irritant |
| Notes | • Store below 25°C. Protect from light. |

| **DACARBAZINE/DTC [Alkylating Agent][1]** | |
|---|---|
| Prep | Inj 200mg |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | Infuse over 30-60 minutes. Avoid rapid infusion. Vein irritant |
| Notes | • Reconstitute 200mg vial with 19.7mL SWFI.<br>• Fridge Item. Protect from light. |

| **DAUNORUBICIN HYDROCHLORIDE [Anthracycline][1/2/3]** | |
|---|---|
| Prep | Inj 20mg |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | Slow IV bolus, IV infusion. Vesicant |
| Notes | • Reconstituted vial 20mg/10mL NS.<br>• Cardiotoxicity is more likely when the total cumulative dose exceeds 400mg/m$^2$ to 550mg/m$^2$ in adults, or 300mg/m$^2$ in children above 2 |

| | |
|---|---|
| | years of age or 10 mg/kg in children less than 2 years of age.<br>• Protect from light. Store below 25°C. |

| **DOCETAXEL (TAXOTERE) [Taxane][1]** | |
|---|---|
| Prep<br>Policy | Inj 20mg & inj 80mg (A*: JKTU item, Oncologists only).<br>Indication: 1) Adjuvant chemo in breast cancer 2) Neoadjuvant chemo for locally advanced head and neck squamous cell cancer. |
| Dose:<br>IV: 1)75mg/m² - 100mg/m² 2)75mg/m²<br>Dose and frequency according to indication and drug regimen use. | |
| Admin | IV Infusion over 1 to 2 hours. After dilute in solvent, vial 20mg/0.5mL and 80mg in 2mL. |
| Notes | • Reconstitute vial with diluents provided.<br>• Store in fridge (2°-8°C); Protect from light. |

| **DOXORUBICIN HYDROCHLORIDE (ADRIAMYCIN-G) [Anthracycline][1/2/3]** | |
|---|---|
| Prep<br>Policy | Inj 50mg/25mL &<br>Inj 50mg Lyophylized Powder Form (for surgeons and used during procedure at Radiology Department) |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IV bolus or IV infusion ( only central line) . Vein Vesicant |
| Notes | Limit total doses to 450mg/m²-550mg/m² as higher cumulative doses are associated with irreversible cardiomyopathy.<br>Protect from light. Store in fridge(2°-8°C) |

| **EPIRUBICIN HYDROCHLORIDE (PHARMORUBICIN) [Anthracycline]** | |
|---|---|
| Prep | Inj 50mg/25mL |
| Dose and frequency according to indication and drug regimen use. | |
| Admin | IV only. Vesicant |
| Notes | Recommended lifetime cumulative dose limit is 900 mg/m²<br>Protect from light; Store in fridge (2°-8°C) |

| **ETOPOSIDE/VP-16 ( FYTOSID-G/LASTET/VEPESID) [Topoisomerase II Inhibitor]** | |
|---|---|
| Prep | Cap 50mg, Inj 100mg/5mL |
| Dose:<br>IV: Dose and frequency according to indication and regimen used. PO: Usual adult dose is 175-200mg daily for 5 days then 3 wks rest interval | |
| Admin | / Infusion only over at least 30-60 min (may be longer).<br>PO > 400mg divide into 2-4 doses. Vein irritant |
| Notes | Inj: Do not refrigerate. Reconstituted solution in normal saline to be infused within 4 hours from preparation time. |

| **FLUDARABINE PHOSPHATE (FLUDARA) [Antimetabolites][1/2/3]** | |
|---|---|
| Prep<br>Policy | Inj 50mg (A*: Only for Allogenic Stem Cell Transplant Program [10 patients], Chronic Lymphocytic Leukemia, Indolent Lymphoma and acute myeloid leukemia [5 patients]) |

| Dose and frequency according to indication and drug regimen use. | |
|---|---|
| Admin | IV only. |
| Notes | Reconstituted vial 50mg/2mL SWFI<br>Stable for 8 hours in room temperature after further diluted in normal saline. |

| **FLUOROURACIL SODIUM HYDROXIDE (5-FU) [Antimetabolites][1,2,3]** | |
|---|---|
| Prep | Inj 500mg/10mL |
| Dose:<br>IV: Dose and frequency according to indication and regimen used; | |
| Notes | Inj: Protect from light. Do not refrigerate. Vein irritant |

| **GEMCITABINE** [Antimetabolite] | |
|---|---|
| Prep<br>Policy | Inj 200mg, 1000mg<br>A*Hematologist. For relapsed/refractory Non Hodgkin and Hodgkin Lymphoma |
| Dose and frequency according to indication and regimen used | |
| Admin | IV Infusion: Dilute 200mg in 5ML NS; 1000mg in 20mL NS |
| Notes | • Infusion > 60 min increases toxicity.<br>• Vein irritant<br>• Reconstituted vial 200mg/5mL and 1000mg/25mL NS<br>• Reconstituted solution store < 30◦c. Do not refrigerate. |

| **HYDROXYUREA/HYDROXYCARBAMIDE** | |
|---|---|
| Prep<br>Policy | Cap 500mg<br>A : Specialist |
| Dose: Adult 1) *Solid tumor*: Intermittently 80mg/kg single dose every 3rd day or continuously 20-30mg/kg once daily or concomitant radiation 80mg/kg single dose every 3rd day 2) *Resistant chronic myeloid leukemia*: 20-30mg/kg once daily 3) *Sickle cell anemia*: 15mg/kg/day, increase by 5mg/kg/day every 12 weeks if blood counts acceptable, to max tolerated dose or 35mg/kg/day. *Other indications* refer individual protocols. **E**lderly may need lower dose. | |
| Notes | • Use in pregnancy and breast feeding not recommended (mutagenic) |

| **IDARUBICIN HYDROCHLORIDE (ZAVEDOS)** [Antracycline] | |
|---|---|
| Prep<br>Policy | Inj 10mg<br>JKTU: Require Pengarah's approval. Hematologist only. |
| Dose and frequency according to indication and regimen used | |
| Admin | IV infusion 10-15 min or slow push into the side of free running saline or dextrose infusion. Vesicant |
| Notes | • Store in fridge (2-8 celcius);Protect from light. |

| **IFOSFAMIDE (HOLOXAN)** [Alkylating agent] | |
|---|---|
| Prep | Inj 1000mg |
| Dose and frequency according to indication and regimen used | |
| Admin | • IV infusion : 1000MG IN 20mL WFI. Vein irritant |
| Notes | • Hydration and/or mesna to protect against hemorrhagic cystitis. |

| | |
|---|---|
| | • Reconstituted vial 1000mg/25mL SWFI<br>• Store below 25◦c |

| **IMATINIB (GLIVEC)** [Tyrosine kinase inhibitor] | |
|---|---|
| Prep<br>Policy | Tab 100mg, 400mg<br>A* Hematologist and Oncologist only |
| Dose and frequency according to indication and regimen used. **A**dult 1) *CML:* dose range 400 – 800mg/day 2) *GIST:* dose range 400 – 800mg/day **C**hildren 1) *CML*: 340mg/$m^2$ (max 600mg/day). Other indications refer individual protocol. | |
| Notes | • Administer with meal and large glass of water<br>• 400 – 600mg can be given once daily, 800mg should be given as 400mg bd<br>• Store below 30◦c. Protect from moisture. |

| **L –ASPARAGINASE (LEUNASE)** [Enzyme] | |
|---|---|
| Prep | Inj 10 000 iu |
| Dose and frequency according to indication and regimen used. | |
| Admin | IM, IV infusion. Diluent: NS/D5% |
| Notes | • IM max vol=2mL<br>• Test dose: 0.1 mL = 2 iu (20iu/mL solution) injected intradermally. Reconstitute 10,000iu vial with 5 mL of diluent (2,000 iu/mL). Withdraw 0.1 mL and dilute with 9.9 mL diluent, giving a skin test solution of 20 iu/ml. For the intradermal skin test, 0.1 mL of this solution (2 IU) is utilized. The skin test site should be observed for at **least** 1 hour for the appearance of a wheal or erythema.<br>• Precaution in coagulopathy<br>• Fridge item |

| **MELPHALAN (ALKERAN)** [Alkylating agent] | |
|---|---|
| Prep<br>Policy | Inj 10mg, Tab 2mg<br>Inj for use in conditioning regime (BEAM protocol) before autologous stem cell transplantation in lymphoma patients. 10 patients or 40 vials/yr. |
| Dose and frequency according to indication and regimen used. | |
| Admin | PO:  1 hr before or 2 hrs after meals)<br>IV infusion usually 15 – 30 min with fast running IV solution into injection port or central line. Vein irritant |
| Notes | • Tab: Administer on empty stomach<br>• Reconstituted vial 10mg/10mL solvent<br>• Inj: Reconstituted solution in normal saline must be infused within 1.5 hours from preparation time. Store below 30°C. Protect from light.<br>• Tab: Fridge item. Protect from light. |

| **MERCAPTOPURINE (6-MP)** [Antimetabolite] | |
|---|---|
| Prep<br>Policy | Tab 50mg<br>Unregistered |
| Dose and frequency refer to indication and regimen used. **A**dults & **C**hildren 1) *ALL* | |

| | |
|---|---|
| initially 2.5mg/kg daily, maintenance 1.5-2.5mg/kg daily | |
| Admin | PO  1 hr before or 2 hrs after meals) |
| Notes | Administer on empty stomach<br>• Drug interaction with allopurinol and azathioprine may require dose adjustment or to avoid concurrent administration. |

| **METHOTREXATE** | |
|---|---|
| Prep | Tab 2.5mg, Inj 50mg/2mL, 1gm/10mL |
| Dose and frequency refer to indication and regimen used. | |
| Admin | PO, IV Bolus, IV infusion (short, 24 to 42 hrs), IM, IT |
| Notes | [Antimetabolite]<br>• Leucovorin rescue for high doses<br>• Formulations with preservatives should not be used for Intrathecal ( IT) or high dose therapy. Only 50mg/2mL vial should be used for IT.<br>• Inj & Tab: Protect from light. Store below 25°C. |

| **MITOMYCIN** | |
|---|---|
| Prep | Inj 2mg, 10mg |
| Dose and frequency refer to indication and regimen used. | |
| Admin | IV infusion 10-15 min, slow IV push into the side of free running saline, intra-arterial infusion, bladder lavage, intraocular |
| Notes | [Cytotoxic Antibiotics]<br>• Vesicant<br>• Reconstituted vial 2mg/2mL and 10mg/10mL SWFI<br>• Protect from light. Store below 25°C. |

| **MITOTANE (LYSODREN)** [Adrenal cytotoxic agent] | |
|---|---|
| Prep<br>Policy | Tab 500mg<br>Unregistered. For Adrenal Carcinoma. Patient name basis. |
| Dose: Initial 2-6 gm daily (in 3 to 4 divided doses), increase incrementally as tolerated to 9-10 g/day in 3-4 divided doses (max. tolerated usually: 2-16 g/day) | |
| Admin | PO ±  |
| Notes | • May cause significant neuropsychiatric adverse effects on long term use that may require modification of treatment<br>• In adrenal insufficiency, may require temporarily discontinuation and initiation of steroid replacement<br>• Hazardous agent, handle with care |

| **MITOXANTRONE (NOVANTRONE)** [Cytotoxic Antibiotics] | |
|---|---|
| Prep<br>Policy | Inj 20mg/20mL<br>JKTU. Require Pengarah's approval. For 1st line AML consolidation, 2nd line relapse and refractory ALL |
| Dose and frequency refer to indication and regimen used. | |
| Admin | Short IV infusion into the side of free running saline. Vesicant |
| Notes | • Life-time cumulative dose of 160 mg/m² increases risk of congestive heart failure. (in high risk patients, 140mg/m²) Stop after cumulative dose of |

| | |
|---|---|
| | 200mg/m$^2$ for all indications.<br>• Baseline and continued cardiac assessment is required.<br>• Store below 25°C. |

| **NILOTINIB (TASIGNA)** [Tyrosine kinase inhibitor] | |
|---|---|
| Prep<br>Policy | Cap 150mg, 200mg<br>150mg A*Hematologist. For newly diagnosed Ph +ve chronic CML<br>200mg A*Hematologist. For 2nd line CML |
| Dose and frequency refer to indication and regimen used. **A**dults *1) 1st line chronic CML*: 300mg 2 times/day *) 2nd line chronic or accelerated CML*: 400mg 2 times/day | |
| Admin | PO  1 hr before or 2 hrs after a meal). Food significantly increases concentration of drug, increasing QT prolongation risk. Avoid Grapefruit |
| Notes | • Administer 12 hours apart . Swallow capsule as a whole.<br>• Contraindicated in long QT interval. Correct hypokalemia and hypomagnesemia before administering nilotinib.<br>• Store below 30◦c. |

| **PROCARBAZINE (NATULAN)** [Alkylating agent] | |
|---|---|
| Prep<br>Policy | Cap 50mg<br>Unregistered. For treatment of relapse and refractory ocular lymphoma with CNS infiltration. |
| Dose and frequency refer to indication and regimen used. | |
| Admin | PO  |
| Notes | • Administer as single daily dose or in 2-3 divided doses<br>• Avoid alcohol, may cause disulfiram-like reaction.<br>• Possess MAO inhibitor activity, may have potential severe drug and food interaction. Avoid tyramine-containing food. Refer Pharmacy for more information. Protect from light |

| **TRASTUZUMAB MULTIDOSE VIAL (HERCEPTIN®)** | |
|---|---|
| Prep<br>Policy | Inj 440mg multidose vial<br>A*: Oncologists only. |
| Dose:<br>*Early Breast Cancer (EBC):Treatment of patients with HER2 positive early breast cancer Following surgery, chemotherapy (adjuvant) and radiotherapy (if applicable)*<br>*Node positive patients*: IV infusion: Weekly schedule: Loading dose 4mg/kg, subsequent dose 2mg/kg. Alternative 3-weekly schedule: Loading dose 8mg/kg, then 6mg/kg. 3 weeks later then 6mg/kg repeated at 3 weekly intervals | |

| **THIOGUANINE (LANVIS)** [Antimetabolite] | |
|---|---|
| Prep | Tab 40mg |
| Dose and frequency refer to indication and regimen used. **Adult and Child:** Usual dose range 60 – 200mg/m$^2$ | |
| Admin | PO ±  |
| Notes | • Store below 25◦c. Protect from light |

| **TRETINOIN (ALL – TRANS RETINOIC ACID/VESANOID)** ***( Do Not confuse with ISOTretinoin/CIS Retinoic Acid/Roaccutane)*** | |
|---|---|
| Prep<br>Policy | Cap 10mg<br>A*: Hematologist. For induction of remission in Acute promyelocytic leukemia (APML). 5 patients/year. |
| Dose and frequency refer to indication and regimen used. **Adult & Child:** *Induction of remission in acute promyelocytic leukemia (APML)* : 45 mg/m²/day in 2 divided doses. Usual dose about 8 caps/day. Treatment should be continued until 30 days after Complete Remission or up to 90 days, whichever comes first. | |
| Admin | PO |
| Notes | • May induce APML syndrome.<br>• Metabolised by CYP 450 enzyme (major 2C8 substrate) , caution potential drug interaction.<br>• Hazardous agent, handle with care.<br>• Protect from light. Store below 30°C.<br>• Do not confuse with Isotretinoin (Roaccutane®) that is used for acne. |

| **VINBLASTINE** [Vinca alkaloids] | |
|---|---|
| Prep | Inj 10mg/10mL |
| Dose and frequency refer to indication and regimen used | |
| Admin | Slow IVB (2-3min), short IV infusion (5-15 min) with free running intravenous infusion |
| Notes | • Vesicant<br>• Fatal if given by any other route. For IV use only.<br>• Fridge Item. Protect from light. |

| **VINCRISTINE** [Vinca alkaloids] | |
|---|---|
| Prep | Inj 2mg/2mL |
| Dose and frequency refer to indication and regimen used. **Adult**: Usual dose 0.4-1.4mg/m$^2$. **C**hildren: Usual dose 1.5-2 mg/m$^2$. **Children** < 10kg or body surface area <1m$^2$: 0.05mg/kg weekly. Max 2mg/dose for all indication. | |
| Admin | • Slow IV Bolus (1min), IV infusion ( 10-15 min or 24hr) together with free running intravenous infusion into the tubing or sidearm. Vesicant. |
| Notes | • Fatal if given by any other route. For IV use only. Crucial to ensure proper needle or catheter placement prior to administration to avoid extravasation.<br>• Fridge Item. Protect from light. |

## L02 ENDOCRINE THERAPY

| **ANASTROZOLE (ARIMIDEX) [Aromatase Inhibitor]** | |
|---|---|
| Prep<br>Policy | Tab 1 mg<br>(A*: Oncologists and breast surgeons only) |
| Dose:<br>*Second line treatment for patients who are intolerant to Tamoxifen*: PO: 1mg once daily | |
| Admin | ± Swallow whole, do not crush or chew. |

| **BICALUTAMIDE (CASODEX) [Antiandrogen][1]** | |
|---|---|
| Prep Policy | Tab 50 mg (A*: Urologists and Oncologists only) |
| Dose: *Advanced prostate cancer, in combination with gonadorelin analogue or surgical castration*: PO: 50 mg once a day; *Locally advanced non-metastatic prostate cancer and locally advanced prostate cancer at high risk of disease progression* : PO: 150 mg once a day | |
| Admin | ± Same time each day |

| **GOSERELIN DEPOT (ZOLADEX) [Gonadotropin Releasing Hormone Agonist][1]** | |
|---|---|
| Prep Policy | Inj 3.6mg Depot pre-filled syringe (A*: For endometriosis, leiomyoma uteri & breast cancer in peri and post menopausal women only). |
| Dose: SC : 3.6mg every 28 days. | |
| Admin | into anterior abdominal wall |
| Notes | • For breast cancer, treatment may continue indefinitely; for endometriosis, duration of treatment should not exceed 6 months.<br>• May cause decreased bone density in women; use with caution if other risk factors are present. Store at <25°C. |

| **GOSERELIN DEPOT (ZOLADEX LA) [Gonadotropin Releasing Hormone Agonist][1]** | |
|---|---|
| Prep Policy | Inj 10.8mg Depot pre-filled syringe (A*: Prescriber: Urologists & Oncologists only: For management of prostate cancer suitable for hormonal manipulation) |
| Dose: SC: 10.8mg every 12 weeks/3 mths | |
| Admin | into anterior abdominal wall |
| Notes | • Transient worsening of signs & symptoms (tumour flare) may develop during the 1st few weeks of treatment.<br>• Monitor patient's condition for urinary tract obstruction or spinal cord compression during 1st few weeks of therapy when used for prostate cancer.<br>• Store at <25°C. |

| **LETROZOLE (FEMARA)[Aromatase Inhibitor][2,3]** | |
|---|---|
| Prep Policy | Tab 2.5mg (A*: Oncologists, Dr. Rohaizak & Miss Norlia from Surgery Clinic. 1) For advanced breast cancer in postmenopausal women in whom other anti-oestrogen therapy has failed. 2)Adjuvant treatment of postmenopausal women with early breast cancer who have received 5 years of adjuvant tamoxifen therapy [extended adjuvant therapy] |
| Dose: PO: 2.5mg once daily | |
| Admin | ± |
| Notes | • Store below 30°C. |

| **LEUPRORELIN ACETATE (LUCRIN) [Gonadotropin Releasing Hormone Agonist][1/2/3]** | |
|---|---|
| Prep<br>Policy | Inj 3.75mg Depot suspension (A*: Only for endometriosis, leiomyoma uteri & treatment of prostate cancer in patients where surgical orchidectomy is contraindicated. Inj 11.25mg Depot suspension (A*: Prescriber: Urology and O&G surgeons and Paediatric Endocrinologists only. 1)For endometriosis, leiomyoma uteri & treatment of prostate cancer in patients where surgical orchidectomy is contraindicated 2) For treatment of Central Precocious Puberty –limited to 10 patients only) |
| Dose:<br>Inj Lucrin Depot 3.75mg: *Prostate cancer* : SC/IM 3.75mg every 4 weeks; *Endometriosis:* 3.75mg as a single dose in first 5 days of menstrual cycle then every month for max 6 months (course not to be repeated); *Reduction of size of uterine fibroids and of associated bleeding before surgery:* 3.75mg as a single dose every month usually for 3-4 months (max 6 months).<br>Inj Lucrin Depot 11.25mg: *Prostate cancer*: SC/IM 11.25mg every 3 months; *Endometriosis*: 11.25mg as a single dose in first 5 days of menstrual cycle then every 3 months for max. 6 months (course not to be repeated); *Central Precocious Puberty*: IM: 11.25 every 3 months | |
| Admin | IM , SC. Vary injection site. |
| Notes | • Transient worsening of symptoms, or the occurrence additional signs & symptoms of prostate cancer may occasionally develop during the 1st few weeks of treatment.<br>• Careful consideration to use in men at particular risk of developing ureteric obstruction or spinal cord compression & patients should be monitored closely during 1st month of therapy.<br>• Use with caution in women with known metabolic bone disease or who are at risk; as it may cause bone mineral density loss.<br>• Do not store >30°C. Protect from light. |

| **MEDROXYPROGESTERONE ACETATE (PROVERA, RAVIMED-G)[Progestin]** | |
|---|---|
| Prep | Tab 100mg, 5 mg |
| Dose:<br>Dose and frequency according to indication and drug regimen use.<br>*Endometrial and renal cell cancer*: PO: 200-400mg daily; *breast cancer: PO:* 500mg daily until disease progression. | |
| Admin | ± |
| Notes | • Store below 25°C. Protect from light.<br>• For other indications, please refer to chapter **G03.** |

| **TAMOXIFEN (TAMOXIFEN-G) [Selective Estrogen Receptor Modulators]** | |
|---|---|
| Prep | Tab 20mg |
| Dose:<br>Dose and frequency according to indication and regimen used. Breast Cancer: PO 20-40 mg daily. Daily doses >20 mg should be given in 2 divided doses. | |
| Admin | ± |
| Notes | • Store below 25°C. Protect from light. |

| **TRIPTORELIN (DECAPEPTYL) [Gonadotropin Releasing Hormone Agonist][1]** | |
|---|---|
| Prep<br>Policy | Inj 3.75mg (A*: For endometriosis, leiomyoma uteri and precocious puberty) |
| Dose: SC, IM: 3.75mg every 28 days. | |
| Admin | For Central Precocious Puberty , administer on days 0, 14 & 28. Thereafter, repeat the same dose every 4 weeks. |
| Notes | • For Leiomyoma uteri and endometriosis; therapy should not exceed 6 months in view of possible side effect on bone density.<br>• Injection site should be rotated.<br>• Refer to product insert for syringe preparation instructions.<br>• Fridge item. |

## L03 IMMUNOSTIMULANT

| **FILGRASTIM (NEUPOGEN)** | |
|---|---|
| Prep<br>Policy | Inj 30MU (300mcg) /1mL<br>JKTU. Requires Pengarah approval. For BMT and treatment of chemotherapy induced neutropenia. Can be given as outpatient if prescribed by the following doctors: Hematologist & Oncologists and only from following clinic /wards: Oncology, Medical 4, BMT ward and Daycare. Max. 1 week supply. |
| Dose: Adult *1) Cytotoxic-induced neutropenia:* 0.5MU/kg once daily, at least 24 hr after chemotherapy, continued until neutrophil count in normal range *2) After bone marrow transplant following myeloablative therapy:* 1MU/kg/daily *3) Peripheral blood progenitor cells mobilization, when used as single agent:* 1MU/kg/day 4) *Peripheral blood progenitor mobilization after myelosuppressive chemotherapy therapy:* 0.5MU/kg/day | |
| Admin | SC bolus, SC infusion, IVI over 30 min , IVI over 24hrs (admin may defer for different indication refer regimen and product monograph) |
| Notes | • Should not be diluted with saline solutions.<br>• Should not be administered within 24 hours before and after chemotherapy.<br>• Vial can only be punctured once. Diluted drug can be kept for 24 hours. Avoid vigorous shaking.<br>• Fridge item<br>• Safety and efficacy not assessed in normal donors <16 yo or > 60 yo.<br>• Dosing (even in morbidly obese patients) should be based on actual body weight. Round doses to the nearest vial size. |

| **INTERFERON ALPHA 2B (INTRON-A)** | |
|---|---|
| Prep<br><br>Policy | Multidose prefilled pen 18MIU/1.2mL (3MIU/0.2mL per dose for total 6 doses), 30MIU/1.2mL (5MIU/0.2mL per dose for total 6 doses)<br>A*Hematologists and Gastroenterologist. For treatment of Hairy Cell Leukaemia, Chronic Myeloid Leukaemia, AIDS-related Kaposi's Sarcoma and Chronic Hepatitis B and C. |
| Dose and frequency refer to indication and regimen used | |
| Admin | SC |
| Notes | • Setting the dose on 18MIU pen: 5 clicks = 1.5MIU, 10 clicks=3MIU, 15 |

| | |
|---|---|
| | clicks=4.5MIU, 20 clicks= 6MIU.<br>• Setting the dose on 30MIU pen: 5 clicks=2.5MIU, 10 clicks=5MIU, 15 clicks=7.5MIU, 20 clicks=10MIU<br>• Commonly associated with flu-like symptoms.<br>• Box warning: May cause or aggravate psychiatric adverse events and cause fatal/life-threatening auto-immune disorders, infection or ischemic disorders.<br>• Different brands of interferon are NOT dose equivalent.<br>• Fridge Item. Remove pen from fridge 30min before each administration to allow temperature to set at 15-25◦C. |

| **INTERFERON BETA 1A (REBIF)** | |
|---|---|
| Prep<br>Policy | Prefilled syringe 12MIU (44mcg)/0.5mL<br>A*Neurologists. For patients with relapsing remitting and secondary progressive multiple sclerosis. Free for named patients listed in the system. |
| Dose: Optimal 44 mcg 3 times/ week. Use lower dose if patient cannot tolerate. When initiating treatment, to allow tachyphylaxis & ↓ side effects: 8.8 mcg during wk 1 & 2, 22 mcg in wk 3 & 4, & 44 mcg from 5th wk onwards. | |
| Admin | SC |
| Notes | • Not recommended for children < 12yrs.<br>• Contains benzyl alcohol. Must NOT be given to premature babies or neonates. Causes toxic reaction and anaphylactoid reaction in infants and children up to 3 yo.<br>• Commonly associated with flu-like symptoms<br>• Caution in patients with previous or current depressive disorders.<br>• Fridge Item. Protect from light. |

| **LENOGRASTIM (GRANOCYTE 34)** | |
|---|---|
| Prep<br>Policy | Prefilled syringe 34MIU (263mcg) in 1mL after reconstitution<br>JKTU. Require Pengarah's approval. For BMT and treatment of chemotherapy induced neutropenia. Can be given as outpatient if prescribed by the following doctors: Hematologist & Oncologists and only from following clinic /wards: oncology, Medical 4, BMT ward and Daycare. Max. 1 week supply. |
| Dose: *1) Cytotoxic-induced neutropenia, after bone marrow or peripheral stem cell transplant, after peripheral blood progenitor mobilization following chemotherapy:* 150mcg (19.2MIU)/$m^2$/day or 5mcg (0.64MIU)/kg/day *2) Peripheral blood progenitor mobilization when used as single agent:* 10mcg (1.28 MIU)/kg/day | |
| Admin | SC, IV infusion |
| Notes | • Should not be administered within 24 hours before and after chemotherapy.<br>• Safety and efficacy in bone marrow transplantation established in children > 2yo<br>• Safety and efficacy NOT established in normal donor >60yo<br>• Store below 30◦c<br>• Reconstituted solution to use immediately, intended for single use. Stable for 24hrs in fridge. |

| **PEGFILGRASTIM (NEULASTIM)** | |
|---|---|
| Prep | Prefilled syringe 6mg/0.6mL |
| Policy | A* Hematologist. For reduction in duration and incidence of febrile neutropenia in patients treated with chemotherapy for malignancy (except MDS and CML). 60 syringes or RM 105 000/year. Inpatient use only. |
| Dose: **Adults** (>/=18yo): 6mg single dose for each chemotherapy cycle. | |
| Admin | SC |
| Notes | • Should be administered about 24 hours after and 14 days before chemotherapy<br>• Fridge item. Stable in room temperature (<30◦c) for 72 hrs<br>• Avoid excessive shaking<br>• For single use only |

| **PEGYLATED INTERFERON ALPHA 2B (PEG-INTRON REDIPEN)** | |
|---|---|
| Prep | Prefilled syringe 80mcg, 100mcg, 120mcg, 150mcg in 0.5mL after reconstitution |
| Policy | A* Gastroenterologist. For treatment of chronic hepatitis B or C. 6 patients/year. Purchase up to RM900 000/year for all chronic hepatitis B & C treatment. |
| Dose: **Adult** (> 18yo) *1) Chronic Hepatitis C Monotherapy* : 0.5 or 1 mcg/kg once weekly for at least 6mths *2) Combination therapy:* 1.5mcg/kg/week in combination with ribavirin capsule. | |
| Admin | SC |
| Notes | • Simplified dosing monograph available, refer full product insert.<br>• Commonly associated with flu-like symptoms. May administer at night to reduce symptoms.<br>• Box warning: May cause or aggravate psychiatric adverse events and cause fatal/life-threatening auto-immune disorders, infection or ischemic disorders. Combined with ribavirin may cause birth defects, fetal mortality, haemolytic anemia, genotoxicity, mutagenicity and possible carcinogenic.<br>• Different brands of interferon are NOT dose equivalent.<br>• Vary injection site.<br>• Fridge item. Remove pen from fridge 30min before each administration to allow temperature to set at (<25◦c).<br>• After reconstitution use immediately, intended for single use. Stable for 24hrs in fridge. |

| **PEGYLATED INTERFERON ALPHA 2A (PEGASYS)** | |
|---|---|
| Prep | Prefilled syringe 135mcg, 180mcg/0.5mL |
| Policy | A* Gastroenterologist. For treatment of chronic hepatitis B & C. |
| Dose: *1) Chronic Hepatitis B:* 180 mcg once weekly for 48 weeks 2) *Chronic Hepatitis C:* 180mcg once weekly, use alone or in combination (recommended if previous treatment failure) with ribavirin capsule for 48 weeks if monotherapy or other durations depending on viral genotype for combination therapy | |
| Admin | SC |
| Notes | • Contains benzyl alcohol must not be given to premature babies or neonates. Causes toxic reaction and anaphylactoid reaction in infants and |

| | |
|---|---|
| | children up to 3 yo.<br>• If require dose modification due to adverse reactions, dose reduction to 135mcg is generally adequate.<br>• Commonly associated with flu-like symptoms<br>• Box warning: May cause or aggravate psychiatric adverse events and cause fatal/life-threatening auto-immune disorders, infection or ischemic disorders. Combined with ribavirin may cause birth defects, fetal mortality, haemolytic anemia, genotoxicity, mutagenicity and possible carcinogenic.<br>• Different brands of interferon are NOT dose equivalent.<br>• Vary injection site.<br>• Ribavirin cap would be given free by Roche for patients on Pegasys.<br>• Fridge item. Protect from light. |

## L 04 IMMUNOSUPPRESSANT

| **ANTI-THYMOCYTE GLOBULIN [EQUINE] (ATGAM)** | |
|---|---|
| Prep<br>Policy | Inj 250mg/5mL<br>JKTU For Aplastic Anemia |
| Dose: Dose and frequency refer to regimen used | |
| Admin | IV infusion |
| Notes | • Fridge item.<br>• Not compatible with dextrose solution<br>• Must be infused over at least 4hrs. Recommended to use central line.<br>• Test dose recommended before administration of first infusion. Close monitoring recommended during infusion of drug. |

| **AZATHIOPRINE (IMURAN)** | |
|---|---|
| Prep | Tab 50mg |
| Dose: Dose and frequency refer to regimen used. Usual dose range 1-4mg/kg/day given as once or divided into two doses, up to 5mg/kg/day in transplant. | |
| Admin | PO |
| Notes | • Administer 1hr before or 3hr after food or milk.<br>• Allopurinol increases level of azathioprine, consider 25% dose reduction.<br>• Avoid concurrent administration with ribavirin (reduces efficacy and increases toxicity) . Tablets should not be divided.<br>• Box warning: Associated with lymphoma and other malignancy.<br>• Store below 25◦c. Protect from light. |

| **BASILIXIMAB (SIMULECT)** | |
|---|---|
| Prep<br>Policy | Inj 20mg in 5mL after reconstitution<br>A*Nephrologist. For prophylaxis against acute graft rejection in renal transplant patients who are at increased risk of rejection. 2-4 patients/year. |
| Dose: **Adults** : First 20mg dose within 2hrs of transplantation surgery, second 20mg dose 4 days after transplant. The second dose should be withheld if complications (eg. severe hypersensitivity reaction, graft loss) occur. | |
| Admin | IV Bolus, IV infusion over 20-30min |

| | |
|---|---|
| Notes | [Monoclonal Antibody]<br>• Used as part of immunosuppressive regimen that includes cyclosporine and corticosteroids.<br>• For central and peripheral intravenous administration only.<br>• Severe acute hypersensitivity reaction (includes anaphylaxis) have occurred on first or re-exposure after several months. Extreme caution is recommended if more than one course is needed because of this risk.<br>• Fridge item. |

| **CICLOSPORIN (SANDIMMUM CONCENTRATE/NEORAL)** | |
|---|---|
| Prep | Inj 50mg/mL, Cap 25mg & 100mg, Oral Solution 100mg/mL (50mL)<br>A*Nephrologist, Hematologist, Dermatologist, Ophthalmologist, Rheumatologist. Only for 1) Patients in whom donor specific transplantation cannot be carried out and in young children to minimise steroid side-effects 2) Named follow-up cases of BMT 3) Recalcitrant psoriasis and atopic eczema 4) Posterior uveitis & panuveitis 5) SLE 6) Aplastic anemia (5 pts for hematology & BMT) |
| Dose: Dose and frequency differ for different indications and regimen. **A**dult oral dose range 2 – 15mg/kg/day divided into 2 doses, IV dose range 3-5mg/kg/day. Adjust dose according to individual needs and drug levels. | |
| Admin | PO, IV infusion over 2 – 6 hrs |
| Notes | • Oral dose= 3 X IV dose. Cap dose = Oral solution dose (1:1)<br>• Inj only recommended for patients who are unable to take oral drugs and to convert to oral as soon as possible because of risk of anaphylaxis due polyoxyethylated castor oil inside formulation. Caution when used in patients previously exposed to IV polyoxyethylated castor oil or with allergic predisposition. Refer full monograph for management.<br>• Caution drug/food/supplement interaction through CYP 450 enzyme<br>• Boxed warning: May cause hypertension, (fatal) infection, increased risk of lymphoma and malignancy (particularly skin) and renal dysfunction<br>• Inj dilute 1:20 to 1:100 NS or D5%<br>• Cap to be swallowed whole<br>• Oral solution: use syringe provided to draw up required volume. After use, wipe syringe on the outside with dry tissue, do not rinse. Dilute with orange or apple juice. Do not use plastic or Styrofoam container.<br>• Cap store below 25◦c.<br>• Oral solution store 20 - 30◦c. Do not refrigerate. Once open used in 2mths<br>• Inj store in room temperature. Do not refrigerate. |

| **EVEROLIMUS (CERTICAN)** | |
|---|---|
| Prep<br>Policy | Tab 0.25mg, 0.75mg<br>A* Nephrologist. For 1) 2nd line in patients showing signs of CNI nephrotoxicity 2) CNI hypersensitivity |
| Dose: **Adult** 0.75mg twice daily, adjust according to individual needs and drug levels. | |
| Admin | PO |
| Notes | • Take consistently with or without food and at the same time as ciclosporin.<br>• Swallow table whole, do not crush. |

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|---|---|
| | • Used in combination with ciclosporin neoral and corticosteroids for prophylaxis of organ rejection after allogeneic renal transplant. Ciclosporin dose should be adjusted down when everolimus has reached steady state in the blood. Concurrent use of standard ciclosporin dose can cause increased nephrotoxicity.<br>• Caution drug/food/supplement interaction through CYP 450 enzyme<br>• Boxed warning: May cause increased risk of renal arterial and venous thrombosis (generally in first 30 days after transplant, may result in graft loss), infection and malignancy (eg. lymphoma, skin cancer),<br>• Store below 30◦c. Protect from light and moisture. |

| **INFLIXIMAB (REMICADE)** [Monoclonal Antibody] | |
|---|---|
| Prep<br>Policy | Inj 100mg in 10mL when reconstituted with SWFI<br>A* Rheumatologist. For Rheumatoid Arthritis. 4 patients at any one time or up to RM 180 000. |
| Dose: *1) Rheumatoid Arthritis:* Induction 3mg/kg at week 0, 2 and 6. Then maintenance 3mg/kg every 8 weeks. After 22 weeks, dose can be increased to 10mg/kg. | |
| Admin | IV infusion over > 2hrs |
| Notes | • Associated with hypersensitivity reaction (include acute infusion effect, serum sickness-like reaction and delayed hypersensitivity). For management refer full product monograph.<br>• Re-administration after 16 weeks of drug-free interval not recommended because of delayed hypersensitivity<br>• Observe for 1hr post infusion for side effects.<br>• Should be given in combination with methotrexate (reduces antibodies to infliximab) for rheumatoid arthritis<br>• Boxed warning: May cause increased risk of serious infection, lymphoma or malignancy and tuberculosis<br>• Refer specific reconstitution protocol.<br>• Fridge item. |

| **LEFLUNOMIDE (ARAVA)** | |
|---|---|
| Prep<br>Policy | Tab 20mg<br>A* Rheumatologist. For active rheumatoid arthritis in adults. |
| Dose: **A**dult (>18 yo) loading dose 100mg for 3 days, maintenance 20mg od. Omit loading dose if increased risk of liver or hematologic side effects. May reduce to 10mg od if unable to tolerate 20mg. | |
| Admin | PO |
| Notes | • Tablets should be swallowed whole.<br>• Concomitant hepatotoxic or hematotoxic DMARDS (eg. methotrexate) not advisable.<br>• Caution when used together with other drugs metabolised by CYP2C9, except NSAIDS.<br>• Washout procedure (cholestyramine 8g 3 times/day usually 11 days or activated charcoal 50g 4 times/day for 11 days) of drug recommended when switching to another DMARD because of persistence of drug in the blood.<br>• Contains lactose. Not recommended in patients with galactose |

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|---|---|
| | intolerance, Lapp-lactase deficiency and glucose-galactose malabsorption.<br>• Boxed warning: May cause rare cases of hepatotoxicity, hepatic failure and death. Not recommended in patients with pre-existing acute or chronic liver disease. |

| **METHOTREXATE** [Antimetabolite] | |
|---|---|
| Prep | Tab 2.5mg |
| Dose: Dose and frequency refer to indication and regimen used. 1) Psoriasis: 2.5-5mg 2 times/day for 3 doses weekly or 10-25mg/dose given once weekly, titrate to lowest dose. 2) Rheumatoid arthritis: 7.5mg weekly or 2.5mg 2 times/day for 3 doses weekly (>20mg higher incident of adverse effect) or 10-15mg weekly, increased by 5mg every 2-4 weeks (max 20mg-30mg/week). **Elderly:** Rheumatoid arthritis/psoriasis: max 20mg/wk | |
| Admin | PO |
| Notes | • Some recommend concomitant folic acid 1-5mg.day (except on methotrexate days) to reduce hematologic, gastrointestinal and hepatic adverse events.<br>• Caution when giving NSAIDS or salicylates with lower doses of methotrexate, may cause unexpected toxicities.<br>• Tab: Protect from light. Store below 25°C. |

| **MYCOPHENOLATE MOFETIL (CELLCEPT) [Inosine Monophosphate Dehydrogenase Inhibitor]** | |
|---|---|
| Prep<br>Policy | Cap 250mg, Tab 500mg (A*: Nephrologist, Hematologist, Ophthalmologist, Neurologist & Rheumatologist only). For non transplant limit to RM500,000/year.<br>Indication: Prophylaxis of renal allograf rejection in:<br>1. High risk patients e.g high PRA, second transplant etc.<br>2. Patients who are unable to tolerate Azathiopurine. For transplant cases ONLY on named patient basis.<br>3. Second line treatment for graft versus host disease that is refractory to prednisolone and ciclosporin.<br>4. Consolidation therapy for severe lupus nephritis (SLE)<br>5. Chronic Uveitis (5 patients only)<br>6. Rheumatoid cases<br>7. SLE and inflammatory Myositis<br>8. Refractory myasthenia gravis (3 pt/year) ( neurologist only) |
| Dose: Dosage according to indication. Standard dosing PO : 1g 2 times/day | |
| Admin | 30 min before  |
| Notes | • Do not crush the tablets and do not open or crush the capsules due to teratogenic risks. |

| **MYCOPHENOLATE SODIUM (MYFORTIC)[1]** | |
|---|---|
| Prep<br>Policy | 180mg & 360mg tab (A*: Nephrologists only)<br>Maintenance immunosuppression in:<br>1. SLE with severe lupus nephritis or bad systemic disease.<br>2. Renal transplant patients intolerant to Mycophenolate Mofetil |

| | |
|---|---|
| | (Cellcept). |
| Dose: PO: 720mg bd | |
| Admin | 3o minutes before  Or  |
| Notes | • 180mg Myfortic = 250mg Cellcept; 360mg Myfortic = 500mg Cellcept<br>• Cellcept and Myfortic dosage forms should not be used interchangeably due to differences in absorption.<br>• Do not crush tab. |

| **RABBIT ANTI-HUMAN THYMOCYTE IMMUNOGLOBULIN (THYMOGLOBULINE)** | |
|---|---|
| Prep | Inj 25 mg/5 mL |
| Dose:<br>*Immunosuppression in transplantation: Prophylaxis of acute graft rejection*: IV: 1-1.5mg/kg/day for 2-9 days after kidney transplantation, corresponding to a cumulative dose of 2-13.5 mg/kg. *Treatment of acute graft rejection*: IV: 1.5 mg/kg/day for 3-14 days, corresponding to a cumulative dose of 4.5-21 mg/kg. *Aplastic anemia*: IV: 2.5-3.5 mg/kg/day for 5 days, cumulative dose of 12.5-17.5 mg/kg. Dose for Prophylaxis of acute and chronic graft versus host disease & Treatment of steroid-resistant, acute graft versus host disease, please see product insert. | |
| Admin | Infuse slowly into large vein. Minimum duration of infusion is 4 hours. Initial dose may need longer infusion. Store vial 2-8 celcius. |
| Notes | • Pre-medicate with PCM, IV corticosteroids and antihistamine. Further dilute the reconstituted powder in NS or D5 to obtain total infusion volume of 50 – 500 ml. |

| **SIROLIMUS (RAPAMUNE) [mTor kinase inhibitor]** | |
|---|---|
| Prep<br>Policy | Tab 1mg (A*: Nephrologists only. Only RM170, 000 or 10 patients/year). Only for existing patients |
| Dose:<br>1) For renal transplant patients with acute rejection and unable to tolerate Calcineurin Inhibitor (CNI). 2) Immunosuppressive agent in severe SLE patients unable to tolerate CNI. DeNovo Transplant: PO: (With Ciclosporin) Loading dose: 6mg, then 2mg once a day | |
| Admin | Take 4 hours after Ciclosporin<br>±  |
| Notes | • Must be taken consistently either with or without food to minimize variation in drug absorption. Do not crush, chew, split tablet. |

| **TACROLIMUS (PROGRAF) [Calcineurin Inhibitor]** | |
|---|---|
| Prep<br>Policy | Inj 5 mg/ml, Cap 0.5mg, 1mg, 5mg [A*: Nephrologists & Hematologists (5 patients/year) only] |
| Dose:<br>For renal transplant and also as an alternative to Ciclosporin in cases of hypersensitivity or intolerant to Ciclosporin.<br>Dosage according to indication. For renal transplant, Adult: PO 0.15-0.30 mg/kg/day in 2 divided doses to start within 24 hours of renal transplant) or by IV infusion over 24 hours 0.05-0.10 mg/kg daily (iv infusion should not exceed 7 days); Child: PO initial | |

| | |
|---|---|
| dose 0.3 mg/kg/day in 2 divided doses or by IV infusion over 24 hours 0.1 mg/kg/day (iv infusion should not exceed 7 days) | |
| Admin |  1 hour before meals or 2-3 hours after meals.<br>IV route use only if unable to tolerate oral medications and continue until oral medications can be tolerated. Anaphylaxis has been reported with IV administration. |
| Notes | • Store below 25°C. |

| **THALIDOMIDE (THALIDOMIDE-G)[1]** | |
|---|---|
| Prep Policy | Cap 50mg , 100 mg (A*:Hematologists only. 20 patients /year for both cap 50mg and 100mg) [Cap 100mg to fill import permit form] |
| Dose: *Multiple Myeloma*: PO: 200 mg once a day (with dexamethasone). Refer specific protocol. | |
| Admin | At least 1 hour after  <br>Preferably at bedtime |
| Notes | • Doses > 400 mg/day may be given in 2-3 divided doses.<br>• Contraindicated in pregnancy. |

| **USTEKINUMAB (STELARA)[1]** | |
|---|---|
| Prep Policy | Inj 45mg/0.5mL Per filled syringe (A*: Dermatologists only. Limited to 5 patients. For treatment of moderate to severe plaque psoriasis in patients who are intolerant or have failed to respond or contraindicated to therapies including ciclosporin, methotrexate and photochemotherapy (PUVA)). |
| Dose:<br>*For adult patients ≤ 100 kg:* SC : Initially 45 mg, followed by 45 mg 4 weeks later, then 45 mg every 12 weeks. *For adult patients >100kg*: SC: Initially 90mg, followed by 90 mg 4 weeks later then 90mg every 12 weeks. | |
| Admin | SC only |
| Notes | • Store in fridge 2-8 Celsius, Do Not freeze or shake.<br>• Protect from light. |

# CLASS M. MUSCULO-SKELETAL SYSTEM

## M01 ANTIINFLAMMATORY AND ANTIRHEUMATIC PRODUCTS

| **CELECOXIB (CELEBREX)** | |
|---|---|
| Prep | Cap 200mg & 400mg |
| Policy | (A*: Only Rheumatologists, Pain Clinic, Orthopaedic & Palliative Care) |
| Dose:<br>*Acute pain or primary dysmenorrhea:* Oral: 400mg initially followed by 200mg additional dose if needed on first day. Subsequent days 200mg twice daily as needed. Max 600mg daily.<br>*Osteoarthritis :* 200mg daily (single or divided dose) Max : 400mg daily<br>*Rheumatoid Arthritis:* 100 – 200mg twice daily. Max: 800mg daily<br>*Ankylosing Spondylosis*: 200mg single dose daily. | |
| Admin |  |
| Notes | Max supply 5 days or 5 tablets only.<br>Post operative pain management for in-patient use only. |

| **D- PENICILLAMINE (CUPRIMINE-G)** | |
|---|---|
| Prep | Cap 250mg |
| Dose:<br>*Rheumatoid Arthritis:* **Adult**: Oral 125-250mg/day for 1mth, increased by 50-150 mg at intervals of 4-12 wks to usual maintenance of 500-750mg/day in divided doses, max 1.5g/day. Upon improvement, reduce dose by 50-150mg to a maintenance dose of 300-450mg/day, or a dose sufficient to suppress symptoms*;* **Child**: Oral Initial dose of 5-10mg/kg/day (increased at intervals of 4 wks over a period of 3-6mths to 15-20mg/kg). Upon improvement, reduce to maintenance dose of 10-15mg/kg.<br>*Wilson's disease*: **Adult**: Oral 250mg-1500mg/day on an incremental basis (Max 2g/day). Maintenance: 750-1000mg/day.; **Child**: 150-750mg daily on an incremental basis. | |
| Admin | Once daily regimen should be taken in the morning<br>Divide total dose to 6 hrly if poor gastric tolerance<br>1 hr before  |
| Notes | Monitor blood count, urine test<br>Require 4-6 mths of treatment for a full response.<br>For other indications pls refer to Chapter on 'Treatment of Poisoning'. |

| **DICLOFENAC SODIUM (VOLTAREN-G)** | |
|---|---|
| Prep | Tab 25mg, 50mg; Supp 12.5mg, 25mg & 50mg; Inj 25mg/mL (3mL) ; Gel 20g |
| Dose:<br>PO: 75-150mg in 2 or 3 divided dose. Deep IM: 75mg od. Rectal: 100mg at night, max 150mg/day. **Child,** 1-12yo: PO/Rectal: 0.5-2mg/kg daily in 2-3 divided doses. Topical: apply 3-4 times/day | |
| Admin | Suppositories to be inserted deep into rectum. |
| Notes | • Contraindicated in young children and infants (<12 mths). Protect from light. |

| **ETORICOXIB (ARCOXIA)** | |
|---|---|
| Prep<br>Policy | Tab 90mg & 120mg<br>(A*: Orthopaedic Specialists, Surgeons, ENT, O&G Specialists and Anaesthesiologists only) |
| Dose:<br>*Osteoarthritis/chronic musculoskeletal pain*: 30-60mg/day; *Rheumatoid arthritis/ankylosing spondylitis*: 90mg/day; *Acute pain*: 120mg/day (Max 8 days) | |
| Admin |  |
| Notes | • Max supply 5 days or 5 tablets only.<br>• Post operative pain management for in-patient use only. |

| **HYDROXYCHLOROQUINE (PLAQUENIL)** | |
|---|---|
| Prep<br>Policy | Tab 200mg<br>(A*: Specialists only and BTS) |
| Dose:<br>**Adult & Child:** Initially 400mg/day in divided doses, maintenance 200-400mg/day, max 6.5mg/kg/day (based on IBW) or 400mg/day. Not suitable for children with ideal body weight of 31kg | |
| Admin |  or with a glass of milk |
| Notes | • Monitor full blood count & vision. Precaution in G6PD deficiency.<br>• Discontinue if no improvement by 6mths. Full ophthalmic examination for initiation of antimalarials, then ophthalmic check every 6-12 months. |

| **IBUPROFEN (BRUFEN)** | |
|---|---|
| Prep<br>Policy | Tab 200mg , Susp 20mg/mL (60mL & 90mL), Inj 10mg/2mL<br>(For Injection: A*: Neonatologist only) |
| Dose:<br>*Arthritis*: **Adult**: Initially 1.2-1.8g/day in 3-4 divided doses (max 2.4g/day), maintenance dose 0.6-1.2g/day; **Child >7kg**, *Juvenile RA*: 30-40mg/kg/day in 3-4 divided doses. Not recommended for <7kg<br>*Pain:* A**dult**: 400mg every 4-6hrs as needed; **Child:** 20mg/kg in 3-4 divided doses. | |
| Admin |  |
| Notes | • For other indications, refer to chapter ***C01 Cardiac Therapy***. |

| **INDOMETHACIN (INDOCID-G)** | |
|---|---|
| Prep | Cap 25mg, Syrup 2mg/mL (EX) |
| Dose:<br><u>Oral:</u> 25mg 2-4 times a day up to 200mg daily.<br>*Persistent night pain/morning stiffness*: may give up to 100mg at night. | |
| Admin |  |
| Notes | • Syrup is stable for 30 days and must be refrigerated. Shake before use. |

| **KETOROLAC TROMETAMINE** | |
|---|---|
| Prep | Inj 30mg/ml (1mL) |
| Dose: | |

| | |
|---|---|
| *Post-operative pain*: **Adult:** IM/IV over ≥15 secs: initially 10mg then 10-30mg every 4 to 6 hrs for max 2 days (Max 90mg/day; **Elderly** & pt <50kg: max 60mg/day). | |
| Notes | • Pain relief may not occur for over 30min after IV/IM<br>• Not used for epidural or spinal administration |

| **MEFENAMIC ACID (PONSTAN-G)** | |
|---|---|
| Prep | Cap 250 mg |
| Dose:<br>**Adult**: 500mg 3 times/day after food; **Child >6mth:** 25mg/kg daily in divided doses, max 7 days | |
| Admin |  |

| **MELOXICAM (MOBIC)** | |
|---|---|
| Prep<br>Policy | Tab 7.5mg<br>(A*: Orthopedics, Physicians & in Pain clinic only) |
| Dose:<br>*Osteoarthritis*: 7.5mg/day; *Rheumatoid arthritis/Ankylosing Spondylitis*: 15mg/day (7.5mg daily in elderly). Max 15mg daily. | |
| Admin |  |
| Notes | • In severe renal failure, should not exceed 7.5mg/day |

| **NAPROXEN (SYNFLEX-G)** | |
|---|---|
| Prep | Tab 275mg (as Sodium) |
| Dose:<br>*Musculoskeletal and joint disorders*: adult 275mg twice daily or 275mg in the morning and 550mg in the evening. *Mild/Moderate pain*: 550mg followed by 275mg 3-4times/day. *Acute gout*: Initially 825mg followed by 550mg in 8 hrs and thereafter 275mg 3 times/day until the attack has subsided. Max 1375mg/day. | |
| Admin |  |

| **PARECOXIB SODIUM (DYNASTAT)** | |
|---|---|
| Prep<br>Policy | Inj 40mg/2mL<br>(A*: General Surgeons, ENT Surgeons, Orthopaedic Specialists and Anaesthetists only) |
| Dose:<br>*Immediate post op pain*: Deep IM, IV: 40mg then 20-40mg every 6-12 hrs prn. Max 80mg per day, for 2 days only. Reduce dose by 50% in elderly <50kg | |
| Admin | Reconstitute with 1mL (20mg) / 2mL (40mg) of NS |
| Notes | • Not to be used in CABG pt, pt with elevated cardiovascular risk, CHF pt (NYHA II-IV) |

## M02 TOPICAL PRODUCTS FOR JOINT AND MUSCULAR PAIN

*(see also M01 Diclofenac)*

| **METHYL SALICYLATE 25%** | |
|---|---|
| Prep | Solution 60ml, Ointment 30g |
| Dose:<br>*Relief of minor aches, muscle and joint pain*: Massage onto intact skin 2-3 times/day | |

## M03 MUSCLE RELAXANTS

| **BACLOFEN (LIORESAL-G)** | |
|---|---|
| Prep<br>Policy | Tab 10mg, Syrup 10mg/mL & 5mg/mL (EX)<br>(A*: Pediatrics Dr. Amara (Orthopedics) & Klinik Lanjutan Strok Only) (Adults use Eperisone Tab) |
| Dose:<br>**Adult:** 5mg 3 times/day increased gradually to max 80mg/day; **Child:** Initially 0.3mg/kg/day in divided doses, to increase cautiously in 1-2wk interval. Maintenance 0.75-2mg/kg (**Child >10yo:** max 2.5mg/kg/day) | |
| Admin |  |
| Notes | • Increase gradually at 3 days interval by 5mg 3 times/day<br>• Optimum dosage generally ranges from 35-75mg daily.<br>• In patients reacting sensitively to baclofen, advise to begin at lower dosage (5-10mg/day) and increase gradually<br>• Discontinue if no benefit within 6-8 wks, avoid abrupt withdrawal, gradual dose reduction over 1-2wks. |

| **CISATRACURIUM BESYLATE [NON-DEPOLARIZING]** | |
|---|---|
| Prep<br>Policy | Inj 2mg/mL<br>( A*: Pakar Anestesiologi sahaja) |
| Dose:<br>*Tracheal Intubation*: **Adult:** Initially IV 0.15mg/kg. Maintenance: IV 0.03mg/kg; **Child** (2-12 y.o): Initially IV 0.1mg/kg. Maintenance: IV 0.02mg/kg. Both given over 5-10s<br>*CABG*: IV Up to 0.1mg/kg<br>*ICU*: **Adult**: Initially IV infusion 0.18mg/kg/hr. Maintenance: 0.03-0.6mg/kg/hr | |
| Admin | IV infusion: Dilute to concentration of 0.1mg/mL-2.0mg/mL in D5/NS |
| Notes | • Fridge Item (2-8 °C).<br>• For use in elderly, renal or hepatic impairment as no dosage alteration needed. However, time to onset of action may differ.<br>• Diluted with NS will have a period of stability of 24 hrs.<br>• Do not administer simultaneously with alkaline solutions. |

| **DANTROLENE (DANTRIUM)** | |
|---|---|
| Prep<br>Policy | Inj 20mg<br>(A*: Anaesthetists only) |
| Dose:<br>*Malignant hyperthermia*: Initial: 1mg/kg into vein and repeated up to a cumulative dose of 10mg/kg. If relapse/recurrence, should be readministered at last effective dose | |
| Admin | Reconstitute by adding 60mL WFI and use within 6 hrs |
| Notes | • Do not store above 25 °C. Do not refrigerate or freeze. Protect from light |

| **EPERISONE (MYONAL)** | |
|---|---|
| Prep | Tab 50mg |
| Policy | (A*: Neurologist & Orthopaedic Specialist only) |
| Dose:<br>150mg daily in 3 divided dose | |
| Admin |  |
| Notes | • May cause drowsiness. Avoid during breastfeeding |

| **ROCURONIUM BROMIDE (ESMERON) [NON-DEPOLARIZING]** | |
|---|---|
| Prep | Inj 10mg/mL (5mL) |
| Dose:<br>*Intubation:* **Adult & Child >28 days**: IV: 600mcg/kg, maintenance: 150mcg/kg or IV infusion in D5/NS of 300-600mcg/kg/hr. *Intensive care*: IV : 600mcg/kg, maintenance IV infusion 300-600mcg/kg/hr for 1st hr then will need to be decreased during the following 6-12hr according to individual response | |
| Notes | • Use immediately after dilution. May be stored up to 24 hours at 2-8°C |

| **SUXAMETHONIUM CHLORIDE (SCOLINE-G)** [DEPOLARISING] | |
|---|---|
| Prep | Inj 100mg/2mL (2mL) |
| Dose:<br>*Endotracheal Intubation*: **Adult:** IV 1mg/kg; IV infusion: 2.5-4mg/min, adjusted according to response of patient. Max 500mg/hr. Neonate and Infants: IV 2mg/kg. 1mg/kg for older children. **Child:** IM up to 4mg/kg body weight, max 150mg for adult and children by IM route. | |
| Admin | IV infusion of 1-2mg/mL (0.1-0.2%) solution at 2.5-4mg/min , Child reduced infusion rate according to body wt. |
| Notes | • Most rapid onset of action about 30-60s, with duration of 2-6min<br>• C/I: Burn patients, renal impairment with raised potassium, severe hyperkalemia, severe long lasting sepsis, atypical cholinesterase genes, history of malignant hyperpyrexia<br>• Fridge Item 2-8 ℃). Protect from light |

| **VECURONIUM BROMIDE (NORCURON)** [NON-DEPOLARISING] | |
|---|---|
| Prep | Inj 4mg/mL |
| Dose:<br>*Intubation*: **Adult & Child >5mo**: IV (max 2mg/mL solution): Initially 80-100mcg/kg then 20-30mcg/kg prn. May be reduced 0.04-0.06mg/kg with inhalation anesthesia, 0.05-0.06mg/kg with balanced anesthesia; **Neonate & Infants <4mo**: Initially IV 10-20mcg/kg then incremental doses to achieve response. IV infusion: 0.8-1.4mcg/kg/min after IV injection of 40-100mcg/kg<br>*ICU paralysis*: **Adult:** Initially IV 0.08-0.1mg/kg, then continuous IV infusion of 0.8-1.7mcg/kg/min. Maintenance: 0.8-1.2mcg/kg/min. Adjust rate of administration by 0.3 mcg/kg/min increments or 50% reductions of previous dose, based on desired clinical response. **Child:** Initially IV 0.1-0.15mg/kg, then continuous IV infusion of 1-2.5mcg/kg/min. Monitor response every 2-3 hrs initially until stable dose, then every 8-12 hrs | |
| Admin | IV infusion in D5/NS as max 1mg/mL solution |

| | |
|---|---|
| Notes | • For obese pt ≥130% IBW, may use IBW |

| **ORPHENADRINE CITRATE** | |
|---|---|
| Prep | Inj 30mg/mL |
| Dose:<br>*Reduction of muscular spasms induced by antipsychotics* : IV/IM 60mg every 12 hrs. | |
| Admin | IV injection over a period of 5 minutes |
| Notes | • Used as alternative to procyclidine injection. Protect from light. |

## M04 ANTIGOUT PREPARATIONS

| **ALLOPURINOL (ZYLORIC-G)** | |
|---|---|
| Prep | Tab 100mg & 300mg |
| Dose:<br>**Adult**: Initial 100mg/day to be increased by 100mg/day at one week intervals until the desired serum uric acid concentration. Maintenance: *Mild gout*: 300mg as single daily dose. *Moderate to severe tophaceous gout*: 400-600mg/day in 2-3 divided doses; **Child** <15yo: 10-20mg/kg/day<br>*Neoplastic disease therapy*: 600-800mg/day starting 12 hrs- 3 days prior to chemotherapy/radiation therapy | |
| Admin |  |
| Notes | • **DO NOT** start treatment during an acute gout attack.<br>• Dose >300mg should be administered in divided doses.<br>• A high fluid intake (2.5-3L daily, except pt with fluid restrictions) and maintenance of slightly alkaline urine is recommended<br>• Discontinue at the first appearance of skin rash/reactions suggestive of allergic reaction.<br>• Prophylactic colchicines or NSAID should be administered until at least 1 month after hyperuricemia is corrected.<br>• Thiazide diuretics may increase risk of allopurinol toxicity. |

| **COLCHICINE** | |
|---|---|
| Prep | Tab 0.6mg |
| Dose:<br>*Acute gout attack*: 0.6-1.2 mg every 2 hours until pain is relieved or until nausea, vomiting & diarrhea occurs. Total dose: 4-8mg. *Prophylaxis*: 0.6mg 1-4 times weekly up to 0.6mg/day/. *Pseudogout*: 0.6-1.2mg every 2 hours until pain is relieved or until nausea, vomiting & diarrhea occurs. *Prophylaxis of pseudogout* : Up to 1.2mg/day. | |
| Admin | ±  |
| Notes | • Alternative drug when COX-2 inhibitors and NSAIDs are contraindicated<br>• Teratogenic. Not to be used in pregnancy or breastfeeding<br>• Most common s/effects are profuse diarrhoea, nausea and vomiting, especially in elderly. To reduce risk of s/effects, dose should be between 0.5mg 2-4 times/day.<br>• Pain & swelling abate within 12 hours & gone within 48-72 hours.<br>• Should NOT be used in HD patient as it cannot be removed by dialysis.<br>• Store < 30°C. Protect from light. |

| **FEBUXOSTAT (ULORIC)** | |
|---|---|
| Prep<br>Policy | Tab 40mg<br>(A*: Rheumatologists and Nephrologists only). |
| Dose:<br>*As a 2nd line treatment of gouty arthritis in adult patients who have failed Allopurinol treatment /where Allopurinol is contraindicated (history of severe allergy to allopurinol):* 40mg once daily. If serum uric acid still >6mg/dL after 2 wks, increase to 80mg once daily | |
| Admin | ±  |
| Notes | • Reduces metabolism of Theophylline, resulting in increased concentration<br>• Consider to add colchicine/NSAIDs upon when initiating Uloric to prevent gout flares<br>• C/I: Concurrent administration with Azathioprine or Mercaptopurine. |

## M05 DRUGS FOR TREATMENT OF BONE DISEASES

| **DISODIUM CLODRONATE (BONEFOS)** | |
|---|---|
| Prep | Inj 60mg/mL, Tab 800mg |
| Dose:<br>*Treatment of hypercalcemia due to malignancy*: PO 2400-3200mg daily, to be reduced gradually to 1600mg daily to maintain normocalcemia. *Treatment of osteolysis due to malignancy*: PO: 1600mg, to be increased if clinically necessary (Max 3200mg/day) | |
| Admin | Once daily dosing & 1st morning dose  <br>2nd dose of twice daily dosing: 1 hr before or 2 hrs after  |
| Notes | • Tablet should be swallowed whole, but may be divided into two for ease of swallowing provided taken at the same time of administration.<br>• Do not crush/dissolve tablet<br>• Should not be taken with antacids, calcium, iron and mineral supplements. |

| **PAMIDRONATE DISODIUM (AREDIA)** | |
|---|---|
| Prep<br>Policy | Inj 60mg/mL<br>(A*: Pediatricians only. Prof Wu Loo Ling/Prof Rahmah's patient requires 1mg/kg/day dose for 3 days. Repeat after 3 months. To supply FOC ) |
| Dose:<br>*Treatment of moderate to severe osteogenesis imperfecta to reduce the risk of limb and vertebral fractures (which causes deformities of long limbs and kyphoscoliosis)*: IV infusion 90mg over 2 hrs, halved rate i.e slower infusion in patients with hypercalcaemia | |
| Admin | IV infusion (in NS/D5 as 90mg/250mL solution over 2 hrs). **Do not give as IV bolus.** |
| Notes | • Patients must be adequately hydrated prior to and during administration of Aredia<br>• Pt with absence of hypocalcaemia should be given oral calcium and vitamin D to reduce risk of hypocalcaemia.<br>• Monitor serum calcium, phosphate and renal profile after initiating drug |

| **ZOLEDRONIC ACID (ZOMETA)** | |
|---|---|
| Prep<br>Policy | Inj 4mg/5mL<br>(A*: Oncologists, Hematologists, Endocrinologists , Urologists , Nephrologists and Palliative Care Specialists (Dr. Hayati Yaakup) only) |
| Dose:<br>*Treatment of hypercalcaemia in malignancy*: **Adult:** IV infusion 4mg over 15 min every 3-4 weeks. Retreatment may be given with 8mg IV for patients with relapse or those refractory to initial treatment. Allow at least 1 wk before treatment. | |
| Admin | Do not mix with other calcium containing infusion solutions or Lactated Ringer's solution. To administer as continuous infusion in a separate line from all other drugs.<br>Dilute 5mL concentrate in 100mL NS/D5. To be used immediately, or store in 2-8$^{o}$C and use within 24 hrs. |
| Notes | • Need dosage adjustment in renal failure<br>• Patients must be adequately hydrated prior to and during administration of Zometa<br>• To monitor serum calcium and phosphate and renal function following initiation of therapy |

# CLASS N NERVOUS SYSTEM

## N01 ANESTHETICS

| **BUPIVACAINE HYDROCHLORIDE & ADRENALINE STERILE PACK (MARCAINE-ADRENALINE)** | |
|---|---|
| Prep | Bupivacaine 0.5% & Adrenaline 1:200,000 INJ. |
| Dose:<br>Adjusted to the site of operation and patient response.<br>Do not exceed a total dose of 150mg Bupivacaine Hcl by anaesthetic action without premedication or special monitoring. | |

| **BUPIVACAINE HYDROCHLORIDE HEAVY** | |
|---|---|
| Prep | Inj Bupivacaine 0.5% Heavy |
| Dose:<br>Adjusted to the site of operation and patient response. | |

| **DESFLURANE (SUPRANE)** | |
|---|---|
| Prep | Desflurane 240mL |
| Policy | Prescriber: Anaestheticians only. |
| Dose:<br>As an inhalation agent for induction and maintenance of anaesthesia in adults; and maintenance in infants and children.<br>**Adult** 3% Desflurane, increased in 0.5%-1.0% every 2 to 3 breaths. Maintenance: 2-6% w/ nitrous oxide, 2.5-5.8% w/ oxygen or oxygen enriched air.<br>**Children**: Not recommended for induction of anaesthesia in paediatric patients.<br>Maintenance: 5.2-10% Desflurane with or without concomitant use of nitrous oxide. | |

| **ETHYL CHLORIDE** | |
|---|---|
| Prep | Spray 100mL |
| Dose:<br>Local skin anaesthesia: spray at distance of about 30cm onto parts of skin as needed until a fine white film formed. | |
| Notes | • Must not be used for short-term-or full narcosis, as it may cause severe damage to the heart, liver and kidneys. Not to spray onto open injuries or wounds. |

| **ETOMIDATE LIPURO** | |
|---|---|
| Prep | Inj Etomidate Lipuro 20mg/10mL |
| Dose:<br>Slow IV Inj: **Adult** 150-300mcg/kg; **Child** under 10 years may need up to 400mcg/kg; Children up to age 15 years and elderly 150-200 mcg/kg. | |
| Notes | • For induction of GA; For short anaesthesia only in combination with an analgesic. |

| **FENTANYL CITRATE ( DD)** | |
|---|---|
| Prep | Inj Fentanyl Citrate 0.1mg/2mL |
| Dose: | |

| |
|---|
| Premed: IM 50-100mcg 30-60 min pre-surgery.<br>Analgesic: IV infusion 1-5mcg/kg intra-operative & in intensive care.<br>Adjunct to anaesthesia: IV 50-100mcg at 1-2 min interval. A reduced dose of 25-50mcg is recommended in elderly and poor risk patients.<br>Child 2-12 yr: 20-30mcg/10kg. |
| Notes • Caution: Possible respiratory depression. |

| **ISOFLURANE (FORANE)** | |
|---|---|
| Prep | Solution 250mL |
| Dose:<br>Still use. Order very minimal. Induction: increase gradually from 0.5-3% in oxygen or nitrous oxide-oxygen; maintenance 1-2.5% in nitrous oxide-oxygen. | |
| Notes | • Using a suitable vaporiser. Dose may need to be increased if used without nitrous oxide. |

| **KETAMINE HYDROCHLORIDE (KETAMAX-G) (DD)** | |
|---|---|
| Prep | Inj Ketamine HCl 10mg/mL (20mL), Inj Ketamine HCl 50mg/mL (10mL). 50mg/mL to be kept as floor stock in A&E department in Emergency Trolley. |
| Dose:<br>Induction and maintenance of anaesthesia: Slow IV: 1-4.5mg/kg, repeated according to patient's response. Deep IM: 9-13mg/kg usually produces surgical anaesthesia within 3-4 minutes, with anaesthetic effect last 12-25 minutes, repeated according to patient's response. IV Infusion: 1mg/mL (0.1%) solution, total dose 0.5-2mg/kg, maintenance 10-45mcg/kg/min, adjust according to response. Off label indication approved by JKTU: Treatment of resistant major depression where other drugs have failed | |
| Notes | • Stability of drug after opening: 30 days, if kept in a syringe. Protect from light. Contraindicated in hypertension / high intracranial pressure. |

| **LEVOBUPIVACAINE INJECTION (CHIROCAINE)** | |
|---|---|
| Prep | Inj Levobupivacaine 0.25%, 0.5%, and 0.75% |
| For Surgical anaethesia and pain management | |
| Notes | • Not to be used for IV regional anaesthesia (e.g. Bier block)<br>• Contraindicated in patients with severe hypotension such as cardiogenic or hypovolaemic shock. Levobupivacaine 0.75% Inj should not be employed for obstetric procedures, or in paracervical blocks in obstetrics. Also should not be considered for paediatric use. |

| **LIDOCAINE HYDROCHLORIDE & PRILOCAINE (EMLA)** | |
|---|---|
| Prep | Lidocaine 2.5% + Prilocaine 2.5%, 1:1 Eutectic Mixt. Cream, Eutectic Patch |
| Dose:<br>Minor procedure e.g. needle insertion & surgical treatment of localized lesions. **Adult** 2g for min 1 hr to max 5 hr; child: approx. 1 hr.<br>Dermal procedure on large area e.g. split skin grafting. **Adult** 2 hr to max 5 hr.<br>Surgical treatment of localized lesions (removal of genital warts) / prior to injection of local anaesthetic: **Adult** 5-10g for 5-10 mins w/o occlusive dressing just before the procedure. Mechanical cleaning / debridement of leg ulcer: **Adult** 1-2g up to 10g, cover with occlusive dressing for approx 30mins. Start cleaning within 10 minutes after removal of cream. | |

| | |
|---|---|
| Venepuncture( for **child > 1yr):** apply one patch or cream a thick layer under an occlusive dressing 1 hr before procedure. | |
| Notes | • Contraindicated in infant <1yo (who are treated concomitantly with methaemoglobin-inducing drugs). |

| **LIGNOCAINE 5% & PHENYLEPHRINE 0.5% NASAL SPRAY (CO-PHENYLCAINE FORTE)** | |
|---|---|
| Prep | Lignocaine 5% + Phenylephrine 0.5% Nasal Spray (50mL) |
| Policy | Only for ENT Clinic and ENT Ward. |
| Dose:<br>For preparation of nasal mucosa for surgery, to aid treatment of acute nose bleeds and removal of foreign bodies from the nose, topical anaesthesia of the pharynx prior to direct or indirect laryngoscopy, topical anaesthesia and local vasoconstriction prior to endoscopy of the upper airways. **Adults and children over 12 years:** 5 squirts per nostril. **Children 8-12 years:** 3 squirts per nostril, **4-8 years:** 2 squirts per nostril, **2-4 years:** 1 squirt per nostril. | |
| Admin | Doses are to be administered only once to nasal or pharyngeal |
| Notes | • Contraindicated in children under 2 years of age. |

| **LIGNOCAINE HYDROCHLORIDE** | |
|---|---|
| Prep | Lignocaine HCl 100mg/5mL Inj (2%) & 500mg/5mL (10%) |
| Dose:<br>Ventricular arrhythmias particularly post-MI: IV Inj: 100mg (50mg in lighter patients or those whose circulation is severely impaired) as slow bolus (over 2-3 mins) with ECG monitoring, may be repeated if necessary once or twice at intervals of not less than 10 mins if an IV infusion is not immediately available; max 200-300mg during 1hr period. IV infusion: 1-4mg/min (20-50mcg/kg/min) following IV bolus administration with ECG monitoring.<br>As local anaesthetics for infiltration and nerve block, the dosage varies and depends upon the area to be anaesthesized, vascularity of the tissues, number of neuronal segments to be blocked, individual tolerance and the technique of anaesthesia. | |
| Admin | IV infusion: dilute each 2g in 250mL of D5%. Discard after 24 hours.<br>Lignocaine 10% (Xylocard 500): must be diluted before use. |

| **LIGNOCAINE HYDROCHLORIDE (LIDOCAIN)** | |
|---|---|
| Prep | Lignocaine Spray 10% (80mL) |
| Dose:<br>Otorhinolaryngology; puncture of maxillary sinus, 3 applications; Max 20 applications for procedures in pharynx, larynx and trachea; reduce dose in child/elderly/debilitated. Max dose 4mg/kg lignocaine or 7mg/kg if + adrenaline. | |
| Notes | • Not recommended for oral use in children under 2 years. |

| **MEPIVACAINE 2% WITH ADRENALINE (SCANDONEST-G)** | |
|---|---|
| Prep | Mepivacaine HCl 2% + Adrenaline 1:80 cartridge for dental use (Dentists only) |
| Indications: For local anaesthesia including infiltration and nerve blocks.<br>**Adult** 1 cartridge for routine work. This dose may be increased for long or difficult procedures or for mixed anaesthesia (block and local). As a rule, do not exceed 3 cartridges.<br>**Children** 6-14 years: 1.35mL. Do not exceed 2.7mL. **3-6 years**: Maximum recommended dose: 1.8mL | |

| | |
|---|---|
| Admin | Should be injected locally or in the vicinity of a dental nerve trunk. |
| Notes | • Any unused portion of a cartridge should be discarded. |

| **PROPOFOL (LIPURO)** | |
|---|---|
| Prep | Inj Propofol Lipuro 1% 200mg (20mL) |
| Dose:<br>Induction and maintenance of general anaesthesia: **Adults** sedation of ventilated intensive care patients; monitored conscious sedation during surgical and diagnostic procedures.<br>Induction: IV Inj/infusion: 10mg/mL (1%) emulsion titrate 20-40mg Propofol every 10 seconds against response of patient until clinical signs.<br>Maintenance: infusion 6-12mg/kg/hour or injection 25-50mg repeated according to response.<br>**Adult:** 1.5-2.5mg/kg, **Child >8 yo:** usually 2.5mg/kg, **Child >3yo:** 9-15mg/kg/hour.<br>Sedation in ICU: IV: **Adult >17yo:** 0.3- 4mg/kg/hour. | |
| Admin | Can be given via IV Inj or continuous infusion.<br>Can be given diluted or undiluted with D5% or 0.9% NS in PVC Infusion bags or glass infusion bottles. |
| Notes | • Monitor blood lipid concentration if sedation >3 days.<br>• If two layers is seen after shaking the product, product should not be used. |

| **REMIFENTANIL (ULTIVA)** | |
|---|---|
| Prep | Inj Remifentanil 5mg |
| Policy | A*: Anaesthetists only |
| Dose:<br>IV : 1. As an analgesic agent for use during the induction and maintenance of general anesthesia for inpatient and outpatient procedures.2. For continuation as an analgesic into the immediate postoperative period in adult patients under the direct supervision of an anesthesia practitioner in a postoperative anesthesia care unit or intensive care setting 3. As an analgesic component of monitored anesthesia care in adult patients.<br>See product literature for details. | |
| Admin | Given as infusion and bolus infusion over not less than 30 seconds. IV bolus not recommended in intensive care settings. |
| Notes | • Stable for 24 hours at room temperature after reconstitution. |

| **ROPIVACAINE HCL (NAROPIN)** | |
|---|---|
| Prep | Inj Ropivacaine 2mg/mL, 7.5mg/mL , 10mg/mL (20mL). |
| Dose:<br>Lumbar epidural: 15-20mL of 10mg/mL solution or 15-25mL of 7.5mg/mL solution. Caesarean section, 15-20mL of 7.5mg/mL solution in incremental dose, up to max total dose of 150mg.<br>Acute pain: Lumbar epidural: continuous infusion with 2mg/mL solution<br>1. Labour pain: 6-10mL/hr, 2. Postop pain: 6-14mL/hr.<br>Thoracic epidural, continuous infusion at 6-14mL/hour of 2mg/mL solution. | |

| **SEVOFLURANE (SEVORANE)** | |
|---|---|
| Prep | Sevoflurane 250mL solution |

| |
|---|
| Dose:<br>Using a specifically calibrated vaporiser, induction up to 5% in oxygen or nitrous oxide-oxygen. Child: up to 7%.<br>Maintenance for adult and child over 1 month 0.5-3%. |

| **THIOPENTAL SODIUM (PENTOTEX-G)** | |
|---|---|
| Prep | Thiopental Sodium 500mg/10mL Inj. |
| Dose:<br>Induction: **Adult:** IV (as a 2.5% or 25mg/mL solution): in fit premedicated adults. Initially 100-150mg over 10-15 seconds, according to patient's condition and response, up to 4mg/kg (max 500mg) **Child:** induction 2-7mg/kg.<br>Raised intracranial pressure: IV: 1.5-3mg/kg repeat if needed. | |

## N02 ANALGESICS

- **Strong opioids :** *Morphine* for severe pain. Frequently causes nausea and vomiting. Confers a state of euphoria and mental detachment.
  *Oxycodone* has efficacy and side effect profile similar to morphine. Primarily used for control of pain in palliative care.
  *Pethidine* is fast acting but short lasting analgesia. Less constipating than morphine. It is a less potent analgesic even in high doses. Not suitable for prolonged pain.
  *Fentanyl patch* is for severe chronic pain.
  *Tramadol* has dual mechanism: exerts opioid effect with serotonergic and adrenergic enhancement. Fewer side effects.
- **Weak opioids:** Dihydrocodeine has analgesic efficacy similar to codeine.

| **COCAINE [OPIATES]** | |
|---|---|
| Prep<br>Policy | Solution 10% (EX).<br>For use in ENT surgery in OT ONLY. |
| Dose:<br>Apply to the nasal mucosal in concentration of 4-10% (40-100mg/mL), Max total of 1.5mg/kg. | |
| Notes | • More pronounced effect achieved with 10% solution with increased risk of toxic reaction |

| **DIHYDROCODEINE BITARTRATE (DF118-G)** | |
|---|---|
| Prep | Tab 30mg |
| Dose:<br>*Moderate to severe pain:* 30mg after food every 4-6 hrly. **Child** > 4yo: 0.5-1 mg/kg every 4-6 hrly. For pain control. | |
| Admin | ±  |
| Notes | • Dicodine in the recommended doses causes little or no respiratory depression, its use in the treatment of post-operative pain may reduce the risk of chest complications. |

| **FENTANYL (DUROGESIC) [OPIOIDS]** | |
|---|---|
| Prep<br>Policy | Patch 12mcg/hr, 25mcg/hr& 50mcg/hr (Durogesic).<br>A*: Oncologists & Hematologists, Prof. Dr Rohaizak and Palliative Care |

| | |
|---|---|
| | Specialists (Dr.Hayati Yaakup). For cancer cases only. |
| Dose:<br>*Management of chronic pain & intractable pain in patients requiring continuous opioid for extended period of time:* Patients who have not previously received a strong opioid analgesic, initial dose, one '25 mcg/hour' patch replaced after 72 hours; patients who have received a strong opioid analgesic, initial dose based on previous 24-hour opioid requirement. | |
| Admin | Apply to dry, non-irritated, non-irradiated, non-hairy skin on torso or upper arm, removing after 72 hours and siting replacement patch on different area (avoid using the same area for several days). |
| Notes | • Caution : Possible respiratory depression<br>• More than one patch may be used for dose greater than 100mcg/hr.<br>• Patient using patch may require periodic supplemental doses of a short acting analgesic for "breakthrough pain".<br>• Patients must be counselled on safe use as 'one patch to be changed every 3 days' is often confused by patients. |

| **MORPHINE [OPIATES]** | |
|---|---|
| Prep | Sustained Release Tab 10mg & 30mg, Aqueous Mixture 2mg/mL (5mL) (EX), Inj 10mg/mL |
| Dose:<br>All doses should be adjusted according to severity of pain/response.<br>Severe pain: Sustained release: Initially 10-20mg 2 times/day titrate according to severity of pain;<br>Mixture : (for opioid naive patients) 5-20mg every 4 hrly, titrate according to response in pain relief. Half dose can be given for breakthrough pain before the 4 hrly dose (convert to slow release tab once dose is stabilised.); **Adult:** Acute pain: SC/IM: 5-20mg (usually 10mg initially) every 4 hrly as needed ; Intrathecal: 0.2mg-1mg, as single dose;<br>**Child:** SC: 0.1 to 0.2mg/kg every 6 hrly as needed, Max 15mg/dose. IV: 0.05 to 0.1mg/kg administered very slowly. Pre-operatively: IM:0.05mg to 1 mg/kg, not to exceed 10mg per dose. | |
| Admin | IV: 4-10mg diluted in 4-5mL WFI administered slowly. |
| Notes | • Oral dose is ~ 2-3 times the parenteral dose.<br>• Side effects : Nausea and vomiting, constipation and drowsiness, larger dose produce respiratory depression and hypotension.<br>• Formulation Conversion Chart : |

| Morphine Injection | Aqueous Morphine | Morphine SR Tab |
|---|---|---|
| (Every 4 hours) | (Every 4 hours) | (Every 12 hours) |
| ½ Dose | Dose | Dose x 3 |
| Eg : 5mg | 10mg | 30mg |
| 10mg | 20mg | 60mg |

(....and so forth according to patient's tolerance to side effects and response.)

• Morphine is metabolized to potent opioid metabolites which are renally-excreted and can accumulate with renal failure. Need to adjust dose.

| **NALBUPHINE HYDROCHLORIDE (NUBAIN-G)** | |
|---|---|
| Prep | Inj 10mg/mL (1mL) |
| Dose:<br>SC/IV/IM: 10-20mg every 3-6hrs as required, max 160mg/day; | |
| Admin | IV: administer over 10-15min. |
| Notes | • Side effect: sedation, sweaty/clammy, nausea/vomiting, dizziness<br>• Effect of respiratory depression can be reversed by naloxone HCL.<br>• Used with caution in women delivering premature infants. |

| **OXYCODONE (OXYCONTIN & OXYNORM)** | |
|---|---|
| Prep<br>Policy | Prolonged Release Tab Oxycontin: 10, 20, 40mg<br>A*: For cancer patients , Pain Clinic , Palliative Care Specialists (Dr.Hayati Yaakup) , Orthopaedic Surgeons and O&G Specialists only. For inpatients and outpatients. Indications : 1) For moderate to severe cancer pain relief (out patient and inpatient) 2) For post op pain. Inpatient only. Supply for 5 days only (OT and Wards)<br>Immediate Release Tab Oxynorm : 5, 10mg.<br>A*: Palliative Care Specialists, Oncologists, Hematologists , Pain Specialists, Orthopaedic Surgeons and O&G Specialists. Indications : 1) For breakthrough pain only 2) Post op pain (In-patient only) Supply for 5 days only. 3) Cancer pain |
| Dose:<br>*Moderate to severe pain in cancer patients, post-op pain, severe pain:*<br>Oxycontin: Start with 10mg 2x/day and titrate to pain relief/unmanageable adverse drug reaction. OxyContin tablets are not intended for use as prn analgesic. | |
| Admin | IV: 4-10mg diluted in 4-5mL WFI administered slowly. |
| Notes | • Swallow whole, and NOT to be broken, chewed or crushed<br>• Taking broken tablets could lead to rapid release and absorption of a potentially toxic dose.<br>• 10mg Oxycontin=20mg PO morphine/each = 25mcg/hr Fentanyl patch, 30mg Oxycontin=20mg IV morphine. Not recommended for child under 18yo. |

| **PARACETAMOL (PANADOL-G)** | |
|---|---|
| Prep | Syrup 120mg/5mL(60mL), Susp 250mg/5mL(60mL), Tab 500mg, Supp 125mg, Supp 250mg |
| Dose:<br>*Mild to moderate pain, pyrexia:* Syrup 120mg/5mL : **Children:** 1 to 6 years : 5-10mL, 3 to 4 times daily; 7 to 12 years: 10-20mL, 3 to 4 times daily.<br>Syrup 250mg/5mL: **Adult** : 2 to 4 teaspoonful (10 to 20mL) not exceeding 80mL daily.<br>**Children :** 1 to 6 years : half to 1 teaspoonful (2.5 to 5mL) 3 to 4 times daily; 7 to 12 years : 1 to 2 teaspoonful (5 to 10mL) 3 to 4 times daily.<br>Tablet: 0.5-1 g every 4-6 hours, max 4g daily; **Child: 1-5yrs** 120-250mg repeated every 4-6 hrs prn (max 4 doses in 24 hrs); **Child 6-12 years** 250-500mg, to be given 3 to 4 times daily. Max 4 doses in 24 hours)<br>Rectal: **Children 1-2 years :** 1 suppository of 125mg; **Children 2-6 years:** 1-2 suppositories of 125mg; **Children 6-12 years:** 1-2 suppositories of 250mg<br>To be inserted deep into rectum every 4 hours as needed, up to four times daily. | |
| Admin |  |

| | |
|---|---|
| Notes | • Do not exceed the recommended dose<br>• Symptoms of overdose in the first 24 hours are pallor, nausea, vomiting, anorexia and abdominal pain |

| **PETHIDINE HYDROCHLORIDE** | |
|---|---|
| Prep | Inj 50mg (1mL) & 100mg (2mL) |
| Dose:<br>*Moderate to severe pain (including obstetric analgesia and peri-operative analgesia:* SC/IM 25-100mg every 4 hrly prn; IV: 25-50mg every 4 hrly; Infusion: 0.3mg/kg/h. Child: IM 0.5-2mg/kg q4h prn, max 100mg. | |
| Admin | • IV dilute to 1mg/mL |
| Notes | • Pethidine metabolite Normeperidine, accumulates accumulates with renal dysfunction or prolonged use at high doses ( not for cancer pain management) . Normeperidine has a long half-life and causes central nervous system (CNS) excitability.<br>• In hepatic disease, pethidine clearance is reduced, and the half life is prolonged. |

| **PIZOTIFEN (SANDOMIGRAN/-G)** | |
|---|---|
| Prep | Tab 0.5mg |
| Policy | Physician and Pusat Perubatan Primer Specialists only |
| Dose:<br>*Prevention of vascular headache including classical migraine and cluster headache:* Start with 0.5mg at night, increased gradually to 1.5mg at night or 0.5mg 3 times/day, usual range 0.5-3mg daily, max 3mg/dose, max 4.5mg/day. **Child**>2yo: up to 1.5mg daily in divided doses, Max single dose at night 1mg | |
| Admin | ±  |
| Notes | • May cause weight gain. |

| **SUMATRIPTAN (IMIGRAN)** | |
|---|---|
| Prep | Fast Disintegrating Tab (FDT) 50mg; (Prescriber : Neurologists only). |
| Dose:<br>*Treatment of acute migraine attacks :* 50-100mg as soon as possible after onset.<br>If a patient does not respond to the first dose of Sumatriptan, a second dose should not be taken for the same attack.<br>Sumatriptan tablets may be taken for subsequent attacks. However, if the patient has responded to the first dose, but the symptoms recur a second dose may be given in the next 24 hours, provided that not more than 300mg is taken in any 24 hour period. | |
| Admin | To be swallowed whole with water.<br>May be dispersed in a small amount of water just before administration (if with swallowing difficulties), but have bitter taste. |
| Notes | • Patient not responding to the first dose, 2nd dose should **NOT** be taken for the same attack.<br>• Child & adolescent <18yo : not recommended.<br>• **Contra-indicated** in ischaemic heart disease, previous myocardial infarction, coronary vasospasm (incl. Prinzmetal's angina), previous cerebrovascular accident/transient ischaemic attack, peripheral vascular disease and uncontrolled/severe hypertension. |

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|---|---|
| | • **Avoid use** with ergotamine & treatment should not be started until 24 hrs after stopping an ergotamine-containing preparation.<br>• Caution : Drowsiness may affect performance of skilled tasks (e.g driving)<br>• The new tab dissolves in approximately 2.5mins compared to 15 min for the conventional Imigran tab. |

| **TRAMADOL HYDROCHLORIDE (TRAMAL-G) [PARTIAL OPIOID AGONIST]** | |
|---|---|
| Prep | Tab 50mg<br>Specialists only. Indicated only for 1) Post-operative pain 2) Rheumatic pain 3) Cancer pain, Inj 50mg/mL (1mL) |
| Dose:<br>Moderate to severe pain: Injection: Adult & child > 14 years: 50-100mg 6 hourly; Max 400mg/day. Post operative pain : IM/IV: 100mg initially then 50mg every 10-20mins prn during 1st hour to total max 250mg in 1st hr, maintenance 50-100mg q4-6h, max 600mg/day. Child >1 yo: 1-2 mg/kg<br>Tablet: Adult and child >14 years : 1 capsule to be taken with a little liquid. However if pain relief is unsatisfactory, a further 50mg capsule may be taken after about 30-60 minutes. Max 400mg/day. | |
| Admin | Taken independent of meals |
| Notes | • IM/IV over 2-3min<br>• Monitor for respiratory depression if given as injection<br>• Adjust dose in renal and hepatic impaired function.<br>• If patient experiencing too much side effects, can try option of Ultracet ( below) |

| **TRAMADOL HCL 37.5MG + PARACETAMOL 325MG (DD) (ULTRACET)** | |
|---|---|
| Prep | Prescribers : A* Cardiothoracic Surgeons, Anesthetists and Pain Specialist, Palliative Care Specialists, ENT Specialists and Orthopaedics only.<br>Indications: Management of moderate to severe pain due to post-CABG , sternectomy and patients that cannot tolerate/ contraindicated to NSAID |
| Dose:<br>Adults & Children >16yr : 1-2 tablets every 4-6hours as needed for pain relief. Max : 8 tabs/day | |
| Admin |  |
| Notes | • Not recommended in patients with creatinine clearance less than 10mL/min and severe hepatic impairment. |

# N03 ANTIEPILEPTICS

- Choice of drug depends on seizure type, epilepsy syndrome, concomitant meds, co-morbidity, age and sex.
- Lamotrigine, Phenobarbital and Phenytoin have long half lives, can be given once daily at bedtime.
- **Withdrawal**: abrupt withdrawal of antiepileptics (especially barbiturates and benzodiazepines) should be avoided as it may precipitate severe rebound seizures.
- **Interactions** between antiepileptic drugs are complex and may enhance toxicity without a corresponding increase in antiepileptic effect. These are usually caused by *hepatic enzyme induction* or *hepatic enzyme inhibition*.

Significant interactions between **antiepileptics** are as follows:-

**Carbamazepine**

*often↓plasma conc. of clonazepam, lamotrigine, phenytoin, topiramate, valproate.*

**Lamotrigine**

*sometimes↑plasma conc. of carbamazepine*

**Phenobarbital**

*often↓plasma conc. of carbamazepine, clonazepam, lamotrigine, phenytoin, valproate*

**Phenytoin**

*often↓plasma conc. of clonazepam, carbamazepine, lamotrigine, topiramate, valproate*

*often↑plasma conc. of phenobarbital*

**Topiramate**

*sometimes↑plasma conc. of phenytoin*

**Valproate**

*often↑plasma conc. of carbamazepine, lamotrigine, phenobarbital, phenytoin(but may also lower)*

| **CARBAMAZEPINE (TEGRETOL )** | |
|---|---|
| Prep | Tab 200mg, CR Tab 200mg & 400mg, Syrup 100mg/5mL (250mL) |
| Dose:. *Focal and secondary generalised tonic-clonic seizures, primary generalised tonic-clonic seizures*: **Adult** initially 100-200mg 1-2 times/day, increased slowly by 100-200mg every 2 wks as necessary, usual dose 0.4-1.2g daily in 2-3 divided doses; max 1.6-2g daily; **Elderly** reduce initial dose ; **Child** (daily in divided doses) up to 4yo: initially 20-60mg, increased in steps of 20-60mg every other day, above 4yo: initially 100mg, increased by 100mg weekly; usual maintenance dose (daily in divided doses) 10-20mg/kg, max up to 1yo: 100-200mg, 1-5yo: 200-400mg, 6-10yo: 400-600mg, 11-15yo: 0.6-1g. *Trigeminal neuralgia*: **Adult** initial dose 200mg to 400mg daily, increased gradually according to response, usual dose 200mg 3-4 times/day; max 1.6g daily. **Elderly** initial dose 100mg 2 times/day is recommended. *Prophylaxis of bipolar affective disorders unresponsive to lithium*: initially 400mg daily in 2-3 divided doses, increased until symptoms controlled, usual dose 400-600mg daily, max 1.6g daily. | |
| Admin |  |
| Notes | • TDM services are provided if needed. |

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|---|---|
| | • Switching patients from **tablet** to **CR**: dosage of CR tablets may need to be increased, recommended to be prescribed in twice daily dosing.<br>• Switching patients from **tablet** to **syrup**: same dosage per day but in smaller, more frequent doses.<br>• Associated with **blood** (leucopenia, agranulocytosis, thrombocytopenia and aplastic anaemia), **skin reactions** (Stevens-Johnson syndrome, toxic epidermal necrosis) and **hepatic disorders**. Test for HLA-B*1502 allele in individuals of Han Chinese or Thai origin – risk of SJS/TEN in presence of HLA-B*1502 allele; history of haematological reactions to other drugs; manufacturer recommends blood counts, hepatic and renal function tests (but evidence of practical value unsatisfactory). Patients/their carers should be told on how to recognise signs of blood, liver or skin disorders and advised patient to seek immediate medical attention if any of the symptoms.<br>• Reversible blurring of vision, dizziness, and unsteadiness are dose-related and may be dose-limiting. These side-effects may be reduced by altering the timing of medication or use of modified-release tablets.<br>*Carbamazepine as AntiManic*<br>• Caution. Treatment should only be started at least after 2 weeks stopping an MAOI, not recommended in combination use with MAOIs.<br>• Treatment is particularly effective in patients with rapid cycling manic-depressive illness (4 or more affective episodes per year) |

| **CLONAZEPAM (RIVOTRIL/-G)** | |
|---|---|
| Prep | Tab 0.5mg & 2mg, Syrup (EX) 0.1mg/mL |
| Dose:<br>*All forms of epilepsy, myoclonus*: **Adult** initially 1mg at bedtime for 4 nights, increased over 2-4 weeks, usual dose 2-4mg usually at bedtime (may be given in divided doses if necessary), max 20mg daily; **Elderly** (or debilitated): initially 0.5mg at bedtime; **Child** up to 1yo: 0.25mg, increased as above to 0.5-1mg, 2-5yo: initially 0.25mg, increased to 1.5-3mg, 6-12yo: initially 0.5mg increased to 3-6mg, established maintenance dose may be given as a single bedtime dose. | |
| Admin |  |
| Notes | • The daily maintenance dose is usually given in 3-4 divided doses.<br>• The sedative side-effects may be prominent, exercised caution in driving or operating machinery; effects of alcohol enhanced.<br>• Avoid abrupt withdrawal as severe rebound seizure may occur.<br>• Syrup 0.1mg/mL (EX) stability : 60 days<br>• 2mg tab : Duopharma; 0.5mg tab : Roche |

| **GABAPENTIN (NEURONTIN/-G)** | |
|---|---|
| Prep<br>Policy | Cap 300mg & 400mg, Tab 600mg (A*: Neurologists, Prof. Madya Dr. Choy (Pain Clinic), Endocrinologist, Palliative Care, Orthopaedic Surgeons and Trauma/Spinal) |
| Dose:<br>*Monotherapy and adjunctive treatment of partial seizures with or without secondary generalisation*: **Adult** 300mg on day 1, then 300mg 2 times/day on day 2, then 300mg 3 times/day on day 3, or initially 300mg 3 times/day on day 1, increased according to response in steps of 300mg daily (in 3 divided doses) every 2-3days, usual dose 0.9- | |

| | |
|---|---|
| 3.6g daily (in 3 divided doses); **Child** 3-12yo: initially 10-15mg/kg/day in 3 divided doses, titrate until effective dose is reached; 3-5yo: 40mg/kg/day in 3 divided doses, 5-12yo: 25-35mg/kg/day in 3 divided doses; max 50mg/kg/day in 3 divided doses; *Neuropathic pain*: 300mg on day 1, then 300mg 2 times/day on day 2, then 300mg 3 times/day on day 3, increased according to response in steps of 300mg daily (in 3 divided doses) every 2-3days, max 3.6g daily. | |
| Admin | ±  Capsules can be opened but the bitter taste is difficult to mask. |
| Notes | • Maximum time interval between doses in the TDS dosing should not exceed **12hrs** to prevent breakthrough convulsions.<br>• Avoid sudden withdrawal, taper off over at least 1 week.<br>• Some children may not tolerate daily increments; longer intervals (up to weekly) may be more appropriate<br>• Dose adjustment is needed in renal impairment patient<br>• Avoid coadministration with antacids. If needed, recommend to administer gabapentin 2 hours following antacid administration.<br>• Tab 600mg: G-Apotex; tab 300mg,400mg : Neurontin |

| **LAMOTRIGINE (LAMICTAL)** | |
|---|---|
| Prep | Tab 50mg & 100mg, Dispersible Tab 5mg & 25mg, Syrup (EX) 50mg/5mL |
| Policy | A*: Neurologists and Psychiatrists only) |
| Dose:<br>*Partial seizures and primary and secondary generalised tonic-clonic seizures, seizures associated with Lennox-Gastaut syndrome*: **Adult** Monotherapy: initially 25mg once daily for 14 days, increased to 50mg once daily for further 14 days, then increased by 50-100mg every 7-14 days, usual dose 100-200mg daily in 1-2 divided doses; max 500mg daily;<br>Adjunctive therapy ***with sodium valproate****:* initially 25mg every other day for 14 days, then 25mg daily for further 14 days, thereafter increased by 25-50mg every 7-14 days; usual dose 100-200mg daily in 1-2 divided doses; **Child** 2-12yo: initially 0.15mg/kg once daily for 14 days (body-weight <13kg: 2mg every other day), then 0.3mg/kg once daily for further 14 days, thereafter increased by 0.3mg/kg every 7-14 days, usual dose 1-5mg/kg in 1-2 divided doses, max 200mg/day.<br>*Adjunctive therapy (with enzyme inducing drugs)* ***without sodium valproate****:* initially 50mg once daily for 14 days, then 50mg 2 times/day for further 14 days, thereafter increased by 100mg every 7-14 days; usual dose 100-200mg 2 times/day; max 700mg daily**; Child** 2-12yo: initially 0.3mg/kg 2 times/day for 14 days, then 0.6mg/kg bd for further 14 days, thereafter increased by 1.2mg/kg daily every 7-14 days, usual dose 5-15mg/kg daily in 2 divided doses, max 400mg/day.<br>*Prevention of mood episodes in bipolar disorder, particularly depressive episodes*: Monotherapy initially 25mg once daily for 14 days, increased to 50mg in 1-2 divided doses for further 14 days, then followed by 100mg/day in 1-2 divided doses, increased in steps of 50-100mg every 7-14 days, usual optimal dose 200mg in 1-2 divided doses. | |
| Admin |  Dispersible tablet may be chewed/ dispersed in a small volume of water (at least enough to cover the whole tablet) or swallowed whole with a little water. For normal tablet, swallow whole. |
| Notes | • Dosage recommended differs if used as adjunct therapy and also for maintenance stabilisation following withdrawal of concomitant psychotropic drugs, refer to product insert for more details.<br>• Associated with **blood** (aplastic anaemia, bone marrow depression and |

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|---|---|
| | pancytopenia), **skin reactions** (Stevens-Johnson syndrome, toxic epidermal necrosis) and **hepatic disorders**. Closely monitor hepatic, renal and clotting parameters.<br>• Initial dose and subsequent dose escalation should not exceed recommendations as these factors are associated with serious skin rash.<br>• Concomitant use with Valproate increase risk of rash |

| **LEVETIRACETAM (KEPPRA)** | |
|---|---|
| Prep | Tab 250mg, 500mg & 1000mg , Inj 500mg/5mL |
| Policy | (A*: Neurologists) |
| Dose: *Monotherapy of partial seizures with or without secondary generalisation*: **Adult** PO or IV initially 250mg 2 times/day which should be increased to an initial therapeutic dose 500mg 2 times/day after 2 weeks. Dose can be further increased by 250mg 2 times/day every 2wks, max 1.5g 2 times/day *Adjunctive therapy of partial seizures with or without secondary generalisation : myoclonic seizures and tonic-clonic seizures*: **Adult and Adolescent over 12yo (body weight >50kg**): initially 500mg 2 times/day, adjusted in steps of 500mg 2 times/day every 2-4wks, max 1.5g 2 times/day; **Child and Adolescent 4-17yo** (12-17yo for *myoclonic and tonic-clonic seizures*), body weight <50kg: initially 10mg/kg 2 times/day, adjusted in steps not exceeding 10mg/kg bd every 2wks; max 30mg/kg 2 times/day. | |
| Admin | ± |
| Notes | • If treatment has to be discontinued, it is recommended to withdraw gradually. **Adult** 500mg twice daily decrements every every 2-4 weeks. **Child** Dose decrease **should not exceed** decrements of 10mg/kg twice daily every 2 wks. |

| **PHENOBARBITAL (GARDENAL SODIUM/ LUMINAL-G)** | |
|---|---|
| Prep | Tab 30mg, Syrup (EX) 30mg/mL (50mL), Inj 200mg/mL |
| Dose : *All forms of epilepsy (except absence seizures):* **Adult** PO 1-3mg/kg/day in 1-2 divided doses or 60-180mg at bedtime; **Child** 1mth-12yo: initially 1-1.5mg/kg 2 times/day, increased by 2mg/kg daily as required, usual maintenance dose 2.5-4mg/kg 1-2 times daily; *Control of acute seizures*: IM: 200mg as a single dose, repeated after 6 hrs if necessary; **Child** 15mg/kg as a single dose; *Status epilepticus*: IV: 10mg/kg at rate of not more than 100mg/min, max 1g; **Child 1mth-12yo**: initially 20mg/kg then 2.5-5mg 1-2 times/day, infuse over 20min (not more than 1mg/kg/min). | |
| Admin | IV Injection: dilute injection 1 in 10 with WFI |
| Notes | • TDM services are provided if needed.<br>• Inj 200mg/mL is an unregistered product. |

| **PHENYTOIN (DILANTIN)** | |
|---|---|
| Prep | Cap 30mg & 100mg, Syrup 125mg/5mL (237mL), Inj 250mg/5mL |
| Dose: *All forms of epilepsy (except absence seizures):* **Adult** PO initially 3-4mg/kg daily or 150-300mg daily (as a single dose or in 2 divided dose), increased gradually as necessary (with plasma-phenytoin concentration monitoring), usual dose 200-500mg daily; **Child** (**1mth-12yo**): initially 1.5-2.5mg/kg 2 times/day, increased according to response and plasma concentration to 2.5-5mg/kg bd, usual max 7.5mg/kg bd or 300mg daily; | |

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|---|---|
| *Status epilepticus and seizures in neurosurgery*: Loading dose : Slow IV Injection: 10-15mg/kg (Rate </= 50mg/min), followed by maintenance dose IV/PO 100mg 3 times daily. (*with blood pressure and ECG monitoring*)<br>Rate and dose reduced according to weight; **Child** Loading dose: IV 15-20mg/kg (neonate 20mg/kg) (Rate </= 1-3mg/kg/min) ; Maintenance dose 2.5-5mg/kg 2 times/day. | |
| Admin | PO: interrupt enteral feeds for at least 1-2 hours before and after giving phenytoin; give with water to enhance absorption.<br>IV : Can be given undiluted or diluted with 4-fold or greater volume of diluents. Up to 50-500mL N/s or D5. IV bolus: inject **slowly at rate of </=50mg/min** and directly into a large vein through a large-gauge needle or intravenous catheter. IV Infusion to run over 2 hrs. To avoid local venous irritation, Flush with NS before and after injection through the same needle or catheter.<br>For Ryle's Tube Feeding: Stop feeding 2 hours before/after giving Phenytoin |
| Notes | • IV administration should **NOT** >50mg/min, cardiotoxic (fatalities reported when given too rapidly). Requires BP and ECG monitoring.<br>• IM route is not recommended as absorption is slow and erratic.<br>• Associated with blood and skin disorders. Advice patient to seek medical help fever, sore throat, rash, mouth ulcers, bruising, or bleeding develop.<br>• TDM services are provided if needed.<br>• Cap 1mg = Syrup 0.92mg<br>• Syrup 125mg/5mL is an unregistered product.<br>• Dosing in obesity:- Loading dose: use Actual body weight; Maintenance Dose: use Ideal body weight/clinical effectiveness |

| **PREGABALIN (LYRICA)** | |
|---|---|
| Prep<br>Policy | Cap 75mg & 150mg<br>(A*: Pain Clinic, Orthopaedic, Rheumatologist, Palliative Care & Neurosurgeons) |
| Dose:<br>*Fibromyalgia :* 300 – 450mg daily in 2 divided doses. Dosing should begin at 75mg 2 times/day and may be increased to 150mg 2 times/day within 1 week. Max 225mg 2 times/day.<br>*Neuropathic Pain* : 150mg daily in 2-3 divided doses and may increase to 300my daily in 2-3 divided doses after interval of 3 to 7 days. Max 600mg daily. | |
| Admin | ±  |
| Notes | • Pregabalin has to be discontinued gradually over a minimum or 1 week.<br>• Need dose adjustment in renal impairment patient<br>• Elderly patients may need dose reduction |

| **SODIUM VALPROATE (EPILIM)** | |
|---|---|
| Prep | Tab 200mg, Syrup 200mg/5mL (300mL), Inj 400mg |
| Dose:<br>*All forms of epilepsy* : **Adult** PO: initially 600mg daily in 2 divided doses, increased by 200mg/day at 3-day intervals, usual dose 1-2g daily in divided doses (20-30mg/kg/day), max 2.5g/day; **Child up to 20kg**: initially 20mg/kg daily in divided doses, may be increased based on clinical efficacy. **>20kg**: initially 400mg daily in divided doses, increased until control, usual dose 20-30mg/kg/day; max 35mg/kg/day; | |

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| **Adult** IV : (slow injection over 3-5mins) 400-800mg (up to 10mg/kg) then followed by IV infusion: max 2.5g daily; **Child up to 12yo** IV: (over 3-5mins) initially 10mg/kg then followed by IV infusion: up to 20-30mg/kg/day, may be increased up to 40mg/kg provided plasma concentrations monitored.<br>*Treatment and prevention of mania in bipolar disorders*: PO initially 1000mg daily, usual dose 1000-2000mg daily, max 3000mg daily. | |
| Admin | IV Injection: reconstitute with solvent provided (4mL).<br>IV infusion: dilute reconstituted solution with 50-100mL NS/D5%, infuse over 60min, max rate of 20mg/min. Infusion should **not** be administered via the same IV line as other additives. Infusion solutions should be kept at 2-8°C and to be used within 24 hours of preparation. |
| Notes | • Dosage recommended differs for combination therapy, please refer to Drug Info Centre (ext 5401).<br>• Dose for IV and oral route is equivalent. Direct switch is possible.<br>• IV therapy should be replaced by oral route as soon as practicable.<br>• In children requiring daily dose above 40mg/kg, chemical and haematological parameters should be monitored.<br>• Associated with liver toxicity, pancreatitis, hepatic and blood disorders. Advised patients to seek immediate medical attention if any symptoms. Monitor hepatic function before starting therapy and every 2 months for the first 6 months.<br>• **Storage:** *Tablets* should not be removed from the container until immediately before use. Store in dry place below 25℃. *Syrup* should be stored below 25℃. |

| **TOPIRAMATE (TOPAMAX)** | |
|---|---|
| Prep | Tab 25mg, 50mg & 100mg |
| Policy | (A*: Neurologists) |
| Dose :<br>*Monotherapy in generalised tonic-clonic seizures, partial seizures with or without generalisation* :<br>**Adult** 25mg at bedtime for 1wk, then increase in steps of 25-50mg daily at intervals of 1-2wks, taken in 2 divided doses, usual dose 100-200mg daily in 2 divided doses, max 500mg daily; **Child 2-18yo** initially 0.5-1mg/kg (max 25mg) at bedtime for 1wk, then increased in steps of 0.5-1mg/kg (max 50mg) taken in 2 divided doses at intervals of 1-2 wks, recommended dose range 3-6mg/kg/day in 2 divided doses, max 15mg/kg (max 500mg) daily.<br>*Adjunctive therapy in generalised tonic-clonic seizures, partial seizures with or without generalisation, and seizure accosiated with Lennox-Gastaut Syndrome* : **Adult** initially 25-50mg at bedtime for 1wk, then increase in steps of 25-50mg daily at intervals of 1-2wks, taken in 2 divided doses, usual dose 200-400mg daily in 2 divided doses, max 1600mg daily**; Child 2-18yo** initially 25mg (or less based on 1-3mg/kg/day) at bedtime for 1wk, then increased in steps of 1-3mg/kg daily according to response at intervals of 1-2 wks and taken in 2 divided doses, recommended dose range 5-9mg/kg daily in 2 divided doses, max 30mg/kg/day.<br>*Migraine prophylaxis* : **Adult and Child (over 16yo)** initially 25mg at bedtime for 1 week, then increased in steps of 25mg daily at intervals of 1 week, usual dose 50-100mg daily in 2 divided doses. Max 200mg daily. | |

| | |
|---|---|
| Admin | ±  Not to be chewed or broken. Ensure adequate fluid intake |
| Notes | • If patient cannot tolerate titration regimen recommended, smaller steps or longer interval between steps may be used.<br>• Caution. Associated with acute myopia with secondary angle-closure glaucoma, typically occurring within 1 month of treatment. Choroidal effusions resulting in anterior displacement of the lens and iris have also been reported.<br>• avoid abrupt withdrawal<br>• Need dose adjustment in renal impairment patient |

## N04 ANTI-PARKINSONISM

- **Levodopa** should be initiated at a low dose and increased in small steps; final dose should be as low as possible; intervals between doses should be chosen to suit the needs of the individual patient.
- ***Common side-effects***: motor complications (such as response fluctuations, dyskinesias), nausea and vomiting, anorexia, insomnia, agitation, postural hypotension. Nausea and vomiting rarely dose-limiting, *domperidone* may be useful in controlling these effects.
- **Sudden onset of sleep**. Excessive daytime sleepiness and sudden onset of sleep can occur with co-beneldopa, co-careldopa, and the dopamine receptor agonists. Exercise caution when driving or operating machinery.
- **Elderly**. Antiparkinsonian drugs can cause confusion in the elderly, thus is important to initiate treatment with low doses and to increase the dose gradually.
- Antiparkisonian drug therapy should never be stopped abruptly as this carries a small risk of ***neuroleptic malignant syndrome***.

| **AMANTADINE SULPHATE (PK-MERZ)** | |
|---|---|
| Prep | Tab 100mg |
| Policy | (A*: Neurologists) |
| Dose :<br>Parkinson's disease (but not drug-induced extrapyramidal symptoms): 100mg once daily, increased after 1 week to 100mg 2 times/day, usually in conjunction with other treatment, max 600mg daily (under medical supervision); Elderly (or debilitated): 100mg daily adjusted according to response. | |
| Admin | With or without food. Last daily dose should be taken in the afternoon. |
| Notes | • May affect performance of skilled tasks (e.g. driving).<br>• Tolerance may develop and confusion and hallucinations may occasionally occur.<br>• Withdrawal of treatment should be gradual irrespective of patient's response. |

| **BENZHEXOL HYDROCHLORIDE OR TRIHEXYPHENIDYL HYDROCHLORIDE (ARTANE-G)** | |
|---|---|
| Prep | Tab 2mg |
| Dose :<br>*Parkinsonism and drug-induced extrapyramidal symptoms (but not tardive dyskinesia)*:<br>**Adult** 1mg once daily, increased by 2mg every 3-5 days according to response, usual | |

| | |
|---|---|
| maintenance 6-10mg daily in 3-4 divided doses, max 20mg daily; Elderly (or debilitated): preferably at lower end of range. **Child** refer BNFC | |
| Admin |  |
| Notes | • May affect performance of skilled tasks (e.g. driving).<br>• Avoid in gastro-intestinal obstruction and myasthenia gravis. |

| **BENSERAZIDE & LEVODOPA (CO-BENELDOPA, MADOPAR)** | |
|---|---|
| Prep | Tab 250mg (Benserazide 50mg/Levodopa 200mg), HBS Cap 125mg (Benserazide 25mg/Levodopa 100mg) |
| Dose :<br>*Parkinsonism (except drug-induced extrapyramidal symptoms*): Tab: expressed as levodopa, initially 50mg 3-4 times/day (100mg 3 times/day in advanced disease), increased by 100mg once or twice weekly according to response; usual maintenance dose 300-800mg daily in 3-6 divided doses after meal; 4-6wks may be needed to achieve optimal effect, if further increase in daily dosage is necessary, it should be done on a monthly basis; **Elderly (or debilitated)** initially 50mg once or twice daily, increased by 50mg every 3-4 days according to response.<br><br>Patients not taking Tab : Initially 1 HBS cap 3 times daily (max initial dose 6 caps daily)<br><br>Patients switching from Tab to HBS Cap :<br>Fluctuations in response related to plasma-levodopa or to timing of dose: HBS Cap: initially 1cap substituted for every 100mg levodopa and given at same dosage frequency, then increased every 2-3 days according to response; average increase of 50% needed over previous levodopa dose and titration may take up to 4 weeks; supplementary dose of *Tab* may be needed with first morning dose; if response still poor to total daily dose of *Tab* + *HBS Cap* corresponding to 1.2g levodopa, consider alternative therapy. | |
| Admin | To be taken at least 30min before or 1 hour after meals, whenever possible.<br>*HBS Cap:* To be swallowed whole without chewing. Capsules must not be opened |
| Notes | • When transferring patients from another levodopa/dopa-decarboxylase inhibitor preparation, the previous preparation should be discontinued **12hours before** (although interval can be shorter).<br>• Over responsiveness (dyskinesia) to HBS capsule can be controlled by increasing the interval between doses, rather than reducing the single doses.<br>• Treatment must not be withdrawn abruptly. Abrupt withdrawal may result in neuroleptic malignant-like syndrome, which may be life threatening. |

| **BROMOCRIPTINE (PARLODEL-G)** | |
|---|---|
| Prep | Tab 2.5mg |
| Dose :<br>*Parkinsonism :* 1st wk 1 - 1.25mg at bedtime, 2nd wk 2 – 2.5mg daily, 3rd wk 2.5mg 2 times daily, 4th wk 2.5mg 3 times daily then increasing by 2.5mg every 3-14 days according to response to a usual range of 10-30mg daily. Max 100mg daily. Given as 2-3 divided doses. | |

| | |
|---|---|
| *Neuroleptic Malignant Syndrome* : Doses of 2.5 mg (through nasogastric tube) 3-4 times/day then titrated up to a maximum dose of 45mg/day. It is recommended that this be continued for 10 days after NMS is controlled and then tapered slowly. | |
| Admin | ±  |
| Notes | • Children < 11 yo not recommended<br>• If adequate response for parkinsonism not achieved within 6-8 wks, daily dose may be further increase by 2.5mg/day weekly.<br>• For other indications, please refer to chapter ***G02 Other Gynaecologicals*** |

| **CARBIDOPA & LEVODOPA (CO-CARELDOPA, SINEMET)** | |
|---|---|
| Prep | Tab 125mg (Carbidopa 25mg/Levodopa 100mg), 275mg (Carbidopa 25mg/ Levodopa 250mg) |
| Dose :<br>Parkinsonism (except drug-induced extrapyramidal symptoms): Tab 125mg: (*expressed as levodopa*) initially 100mg 3 times/day, increased by 50-100mg daily or on alternate days according to response, max 800mg (with carbidopa 200mg) daily in divided doses; Tab 275mg: (*expressed as levodopa*) initially 125mg 1-2 times/day, increased by 125mg daily or on alternate day according to response, maintenance usually 3-6 tabs daily, max 2g (with carbidopa 200mg). No extra advantage will be gained if dose increased beyond 2g daily. | |
| Admin |  Give with meals to prevent GI upset. |
| Notes | • Total daily dose of carbidopa should be at least 70mg. Lower dose might not achieve full inhibition of extracerebral dopa-decarboxylase, resultant increase in side-effects (nausea, vomiting and cardiovascular effects).<br>• When transferring patients from another levodopa/dopa-decarboxylase inhibitor preparation, the previous preparation should be discontinued **12hours before** (24hours for slow-release preparations).<br>• Transferring patient from another levodopa preparations to co-careldopa (Sinemet), if daily levodopa<1500mg, initially (*expressed as Carbidopa*) 100mg tds-qid; if daily levodopa>1500mg, 250mg tds-qid. |

| **CARBIDOPA, LEVODOPA & ENTACAPONE (STALEVO)** | |
|---|---|
| Prep<br>Policy | Tab 50mg/12.5mg/200mg (Levodopa 50mg/Carbidopa12.5mg/Entacapone 200mg), 100mg/25mg/200mg (Levodopa 100mg/Carbidopa 25mg/Entacapone 200mg), 150mg/37.5mg/200mg (Levodopa 150mg/Carbidopa 37.5mg/ Entacapone 200mg )<br>200mg/50mg/300mg (Levodopa 200mg/Carbidopa 50mg/ Entacapone 200mg )( A*: Neurologists) |
| Dose :<br>*Parkinsonism & 'end-of-dose' motor fluctuations not adequately controlled with levodopa/decarboxylase inhibitor treatment*: only 1 tablet of *Stalevo*® to be taken for each dose; Max 8 tabs of 50mg, 75mg, 100mg, 125mg, 150mg or 6 tabs 200mg tab daily.<br>*Patients receiving standard-release co-careldopa/ co-beneldopa alone*: initiate at a dose that provides similar/slightly lower amount of levodopa;<br>*Patients with dyskinesia/ receiving >800mg levodopa daily*: introduce entacapone before transferring to *Stalevo*®, levodopa dose may need to be reduced by 10-30% | |

initially within the first days to first weeks after initiating *Stalevo*® treatment. A direct switch from levodopa/DDC inhibitor to *Stalevo*® is **NOT recommended**;
*Patients receiving entacapone and standard-release co-careldopa*: initiate at a dose similar amount of levodopa.
*Patients receiving entacapone and standard-release co-beneldopa*: treatment should be stopped for one night and initiate *Stalevo*® next morning, at a dose similar/slightly higher (~5-10%) amount of levodopa.
When more levodopa is required, the next higher strength of *Stalevo*® should be taken and/ or the frequency of doses should be increased up to a max 8 times daily and not to exceed the max daily dose.

| | |
|---|---|
| Admin | ±  |
| Notes | • Avoid iron-containing preparations at the same time of day (may result in decreased iron absorption from GI tract).<br>• Total daily dose of carbidopa should be at least 70mg. Lower dose might not achieve full inhibition of extracerebral dopa-decarboxylase, resultant increase in side-effects (nausea, vomiting and cardiovascular effects).<br>• Urine colour may change to reddish-brown. |

| **ENTACAPONE (COMTAN)** | |
|---|---|
| Prep | Tab 200mg |
| Policy | (A*: Neurologists) |
| Dose :<br>*Adjunct to levodopa/dopa-decarboylase inhibitor in Parkinson's Disease for treatment and 'end-of-dose' motor fluctuations*: 200mg with each dose of levodopa/dopa-decarboxylase inhibitor, max 2g daily. To be taken simultaneously with each levodopa/dopa-decarboxylase inhibitor dose. | |
| Admin | ±  |
| Notes | • Concurrent levodopa dose may need to be reduced by 10-30% within the first days to first weeks after initiating treatment.<br>• Avoid iron-containing preparations at the same time of day ie 2-3 hrs apart (may result in decreased iron absorption from GI tract).<br>• May affect performance of skilled tasks (e.g. driving).<br>• Urine colour may change to reddish-brown, but it is harmless.<br>• Avoid abrupt withdrawal . |

| **PIRIBEDIL (TRIVASTAL RETARD)** | |
|---|---|
| Prep | SR Tab 50mg |
| Policy | (A*: Neurologists) |
| Dose :<br>Parkinson's disease (treatment of all forms essentially involving tremor): initially 50mg 1-2 times/day, increased to therapeutic dosage by 50mg weekly up to (monotherapy) 150-250mg daily in 3-5 divided doses, (in combination with levodopa therapy) 100-150mg daily in divided doses. | |
| Admin |  |

| **PRAMIPEXOLE DIHYDROCHLORIDE MONOHYDRATE (SIFROL)** | |
|---|---|
| Prep | Tab 0.375mg ER & 1.5mg ER |

| | |
|---|---|
| Policy | (A*: Neurologists only) |
| Dose : *Parkinson's disease (newly treated, young onset, advanced) and as an adjunct to levodopa with motor complications*: Initially 0.375mg daily on wk 1. If tolerated, double the dose up to 0.75mg on wk 2. If a further dose increase is necessary the daily doses should be increased by 0.75mg at weekly intervals up to maximum dose of 4.5mg daily. Maintenance dose should be in the range of 0.375mg to 4.5mg daily. | |
| Admin | ±  |
| Notes | • Treatment discontinuation : Dose should be tapered off at a rate of 0.75mg per day until the daily dose has been reduced to 0.75mg. Thereafter the dose should be reduced by 0.375mg per day.<br>• During pramipexole dose titration and maintenance, concurrent levodopa dose may be reduced to avoid excessive dopaminergic stimulation while dosage of other anti-parkinsonian medication kept constant.<br>• When dose is titrately too rapidly, hypotensive reactions may be disturbing in some patients during the first few days of treatment.<br>• Sudden onset of sleep, hallucination and drowsiness has been reported. |

| **PROCYCLIDINE HYDROCHLORIDE (KEMADRIN)** | |
|---|---|
| Prep | Inj 10mg/2mL (Registered under Pharm-D) |
| Dose : *Acute torsion dystonia and paroxymal dyskinesia*: IV/IM: 5-10mg, frequently effective within 5-10min, but some may need 30min for relief; **Elderly** preferably lower end of range. | |
| Admin | 5-10mg can be given IV over 5-10 min |

| **ROPINIROLE (REQUIP PD 24HOUR)** | |
|---|---|
| Prep | Prolonged Release Tab 2mg & 4mg |
| Policy | (A*: Neurologists) |
| Dose : *Parkinson's disease monotherapy (early stage) or as adjunct to levodopa to control 'on-off' fluctuations (advanced disease):* Initially 2mg once daily for 1 wk, then 4 mg once daily, increased according to response by 2mg at intervals of at least 1 wk up to 8mg once daily. If still no response, increase by 2-4mg at intervals of at least 2 wks as necessary, max 24mg once daily. **Elderly** consider slower titration. | |
| Admin | ±  |
| Notes | • Patient should be maintained on the lowest dose that achieve symptomatic control.<br>• If treatment is interrupted for 1 day or more, re-initiation by dose titration should be considered.<br>• Concurrent dose of levodopa may need to be reduced by approx. 30%<br>• Very common causing nausea & vomiting |

| **ROTIGOTINE (NEUPRO)** | |
|---|---|
| Prep<br>Policy | Transdermal Patch 2mg/24hr, 4mg/24hr, 6mg/24hr, 8mg/24hr (A*: Neurologists) |
| Dose : | |

| | |
|---|---|
| *Parkinson's disease monotherapy (early stage) :* Initially apply 2mg/24hr patch, increased in steps of 2mg/24hr at weekly intervals if required, max 8mg/24hr. *Adjunctive therapy with levodopa to control 'on-off' fluctuations (advanced disease):* Initially apply 4mg/24h patch, increased in steps of 2mg/24hr at weekly intervals if required, max 16mg/24hr. For most patients an effective dose is reached within 3 to 7 wks at dose of 8mg/24hr up to a max dose of 16mg/24hr. | |
| Admin | Apply patch once daily to clean, dry, intact healthy skin on abdomen, thigh, hip, flank, shoulder or upper arm. Avoid applying on the same site within 14 days. Remove after 24hr. |
| Notes | • Applied patch at approximately the same time every day<br>• If patch falls off, a new patch should be applied.<br>• Remove patch before going for MRI or cardioversion to avoid skin burns.<br>• External heat (e.g: heating pad, sauna or hot bath) should not be applied to the area of the patch.<br>• Avoid abrupt withdrawal.<br>• Sudden sleep onset, hypotension and drowsiness have been reported<br>• Store at 2-8°C in original package |

| **SELEGILINE HYDROCHLORIDE (JUMEX-G)** | |
|---|---|
| Prep | Tab 5mg |
| Dose :<br>*Parkinson's disease monotherapy (early stage) or as adjunct to levodopa to reduce 'end of dose' deterioration (advanced disease)*: Initially 5mg in the morning, increased after 2-4 wks if tolerated to 10mg OM or 5mg at breakfast and midday. Max 10mg daily. | |
| Admin | ±  |
| Notes | • Concurrent levodopa dose may need to be reduced by 10-30% in steps of 10% every 3-4 days<br>• To avoid initial confusion and agitation, low dose is preferred during treatment initiation, particularly in the elderly.<br>• When combined with levodopa, avoid or use with great caution in **postural hypotension**.<br>• Recommended to take in the morning as Selegiline may cause insomnia<br>• Store in a dry place, below 25°C and protect from light. |

## N05 PSYCHOLEPTICS

| **ALPRAZOLAM (XANAX-G)** | |
|---|---|
| Prep | Tab 0.25mg, 0.5mg & 1mg |
| *Anxiety*: **Adult** start 0.25-0.5mg 3 times/day, usual range 0.5-4mg/day in divided doses. *Depression*: start 0.5mg 3 times/day, usual range 1.5-4.5mg/day in divided doses. **Geriatric (or debilitated)** 0.25mg 2-3times/day, usual range 0.5-0.75mg/day in divided doses, increased gradually if needed and tolerated. *Panic-related disorders*: 0.5-1mg at bedtime or 0.5mg 3 times/day, dose increase <1mg every 3 or 4 days, max. 10mg/day. | |
| Admin | ±  |
| Notes | • For short-term use<br>• Discontinuation therapy: reduce dosage slowly, daily dosage reduce <0.5mg every 3 days. |

| **CHLORAL HYDRATE** | |
|---|---|
| Prep | Elixir, Paediatric, BP (EX) 40mg/mL (60mL), 500g crystals |
| *Insomnia (but not recommended)*: **Child 1mth-12yo**: 30-50mg/kg (max.1g) at night. **Child 12-18yo**: 0.5-1g (max.2g) at night. *Sedation for painless procedures*: **Child: 1mth-12yo**: 30-50mg/kg (max 1g), 45-60 min before procedure, doses up to 100mg/kg (max.2g) may be used. **Child 12-18yo**: 1-2g 45-60 min before procedure. | |
| Admin | Dilute liquid with plenty of water or juice to mask unpleasant taste. |
| Notes | • Drowsiness may persist the next day. |

| **CHLORPROMAZINE HYDROCHLORIDE (LARGACTIL-G)** | |
|---|---|
| Prep | Tab 25mg & 100mg |
| *Schizophrenia and other psychoses, mania, short-term adjunctive management of severe anxiety, psychomotor agitation, excitement, and violent or dangerously impulsive behaviour* **: Adult & child >12yo** Initially 25mg 3 times/day (or 75mg at night), adjusted according to response, to usual maintenance dose 75-300mg daily (up to 1g daily may be required in psychoses); **Elderly (or debilitated)**: one-third to half adult dose.<br>*Treatment of mild alcohol withdrawal with agitation:* 25-50mg 2 times/day; less severe : 30-75mg daily in divided doses.<br>*Intractable hiccup:* 25-50mg 3-4 times/day | |
| Admin | ± |
| Notes | • WARNING: Owing to the risk of contact sensitisation, direct contact should be avoided; tablets should not be crushed and solutions should be handled with care.<br>• Should not be given to stuporous patients.<br>• For other indications, refer to relevant chapters (anti-emetic) |

| **CLOZAPINE (CLOZARIL)** | |
|---|---|
| Prep | Tab 25mg & 100mg |
| Policy | A*: Psychiatrists only |
| *Schizophrenia*: **Adult (>16yo)**: 1st day 12.5mg once or 2 times/day, 2nd day 25-50mg. Then increase gradually (if well tolerated) in steps of 25-50mg daily over 2-3wks up to 300mg daily in divided doses (larger dose at night, up to 200mg daily maybe taken as single dose at bedtime). If necessary, daily dose maybe further increased in steps of 50-100mg once (preferably) or twice weekly, usual dose 200-450mg daily, max. 900mg daily; **Elderly**: 12.5mg once on 1st day then 25-37.5mg on 2nd day, subsequent increment max. 25mg daily. | |
| Admin | ± |
| Notes | • Treatment should be maintained for ≥ 6 mths.<br>• **Ending therapy**: gradually reduce dose over 1-2wks. If abrupt discontinuation is necessary (e.g leucopenia): observe for recurrence psychotic symptoms and symptoms related to cholinergic rebound (profuse sweating, headache, nausea, vomiting, diarrhoea).<br>**Cautions:**<br>• **Agranulocytosis**: Neutropenia & potentially fatal agranulocytosis reported. Leukocyte & differential blood count MUST be normal before |

| | |
|---|---|
| | starting. Monitor blood counts closely. Immediate discontinue permanently if WBC count <3000/$mm^3$ or ANC <1500/$mm^3$ and refer to haematologist. Avoid concurrent myelosuppressive drugs. Inform patient to report immediately symptoms of infection, fever, sore throat or other flu-like symptoms.<br>• **Myocarditis & cardiomyopathy** : Fatal myocarditis (most common in first 2 mths) & cardiomyopathy reported. Discontinue permanently if induced by clozapine.<br>• **Orthostatic hypotension** can occur, AVOID rapid dose escalatation. |

| **DEXMEDETOMIDINE HCL (PRECEDEX)** | |
|---|---|
| Prep | 100mcg/mL(2mL) |
| *Initiation of ICU sedation*: **Adult** initial loading infusion 1mcg/kg over 10min, maintenance: IV infusion 0.2-0.7mcg/kg/hr titrate to clinical effect. *Initiation of procedure sedation*: **Adult** initial IV infusion 1mcg/kg [less invasive procedure (e.g. ophthalmic surgery) 0.5mcg/kg] over 10min; maintenance: IV infusion 0.6mcg/kg/hr titrate to clinical effect with doses ranging 0.2-1mcg/kg/hr. *For awake fiberoptic intubation patients*: **Adult** initial loading infusion 1mcg/kg over 10min, fixed maintenance: IV infusion 0.7mcg/kg/hr until endotracheal tube is secured. | |
| Admin | Dilute 2mL (200mcg) with 48mL NS (total 50mL) yield concentration 4mcg/mL for infusion. |
| Notes | • Not recommended in <18yo.<br>• Not indicated for infusion >24hrs.<br>• Dose reduction should be considered for >65 yo/hepatic/renal impaired. |

| **DIAZEPAM (VALIUM-G)** | |
|---|---|
| Prep | Inj 10mg/2mL, Tab 2mg, 5mg, 10mg ( Malaysian quota for tablet full. Use alternatives) |
| *Anxiety*: **Adult** 2mg 3 times/day, increase if necessary to 15-30mg daily in divided doses. Elderly (or debilitated) half adult dose. *Insomnia associated with anxiety*: **Adult** 5-15mg at bedtime. *Premedication and sedation for clinical procedures*: **Adult**>18yo, 5-10mg 1-2hrs before procedure (max.20mg for dental procedures in hospital); Elderly(or debilitated) half adult dose; **Child** 1month-12yo: 200-300mcg/kg(max.10mg), 12-18yo:200-300mcg/kg(max.20mg)<br><br>*Severe acute anxiety, control of acute panic attacks & acute alcohol withdrawal:* **Adult** IM or slow IV injection 10mg , repeated if necessary after ≥ 4hrs. | |
| Admin | ±  <br>IM or slow IV injection (into a large vein, rate ≤ 5mg/min) |
| Notes | • Only use IM route when PO & IV routes not possible.<br>For other indications, refer to relevant chapters. |

| **FLUPENTIXOL DIHYDROCHLORIDE (FLUANXOL)** | |
|---|---|
| Prep | Tab 0.5mg |
| *Psychosis*: **Adult** initially 3-9mg 2times/day, adjusted according to response, max.18mg daily; Elderly (or debilitated): initially ¼-½ adult dose. *Depression*: **Adult>18yo**: initially 1mg(elderly 0.5mg) in the morning, increase after 1 week to 2mg(elderly 1mg) if necessary, max.3mg(elderly 1.5mg) daily. Doses >2mg (elderly 1mg) in divided doses, | |

| | |
|---|---|
| last dose before 4pm. | |
| Admin | ±  |
| Notes | • Although drowsiness may occur, can also have an alerting effect so should not be taken in the evening.<br>• Discontinue if no response after 1 wk at max. dosage<br>• For other indications, refer to relevant chapters. |

| **FLUPHENAZINE DECANOATE (MODECATE-G)** | |
|---|---|
| Prep | Inj 25mg/mL (1mL ) |
| *Schizophrenia and other psychoses*: (test dose) Deep IM 12.5mg (elderly 6.25mg) then after 4-7 days 12.5-100mg repeated at intervals of 14-35 days, adjust according to response. | |
| Admin | Deep IM inj into gluteal muscle, use needle ≥21 gauge |
| Notes | • If doses > 50mg is necessary, the next dose and succeeding doses should be increased cautiously in steps of 12.5mg. Max. dose 100mg.<br>• Not intended for use in children <12yo.<br>• Preparation contains benzyl alcohol thus AVOID in < 2yo. |

| **HALOPERIDOL (SERENACE-G)** | |
|---|---|
| Prep | Tab 5mg, Syrup 0.5mg/5mL(Ex), Inj 5mg/mL (1mL) |
| *Schizophrenia & other psychoses, mania, short-term adjunctive management of psychomotor agitation, excitement, and violent or dangerously impulsive behaviour*: **Adult & child >12yo** PO: initially 0.5-3mg 2-3 times daily or 3-5mg 2-3 times daily in severely affected or resistant patients, in resistant schizophrenia up to 30mg daily may be needed; adjust according to response to lowest effective maintenance dose (5-10mg daily). **Elderly (or debilitated)** initially half adult dose.<br>*Control of acutely agitated patients with moderate symptoms*, IM: **Adult >18yo**, initially 2-10mg (**Elderly (or debilitated)** half adult dose), then every 4-8hrs according to response to total max. 18mg daily; severely disturbed patients may require initial dose of up to 18mg. *Motor tics, adjunctive treatment in choreas & Tourette syndrome*: PO 0.5-1.5mg 3 times daily adjusted according to response; ≥10mg daily may occasionally be needed. *Tourette syndrome*: **Child 5-12yo**,: 12.5-25mcg/kg 2 times/day, adjusted according to response, max.10mg daily. | |
| Admin | ±  <br>• IM |
| Notes | • Higher risk of QT-prolongation, torsades de points when given as IV<br>• Diphenhydramine can be administered to manage severe extrapyramidal reactions. |

| **LITHIUM CARBONATE (LICONATE-G)** | |
|---|---|
| Prep | Tab 300mg |
| *Acute treatment of mania and hypomania*, **Adult & Child >12yo**: 1.5-2g daily in divided doses for first 5-7 days, adjusted to achieve a serum-lithium concentration of 0.4-1.0mmol/L (max 1.5mmol/L), reduce dose rapidly once the acute phase has passed; *Prophylactic therapy*: usual dose 0.5-1.2g daily in divided doses. | |
| Admin |  |

| | |
|---|---|
| Notes | • Dosage recommended according to brand. Preparation vary widely in bioavailability. Please check with pharmacy the latest preparation.<br>• Narrow therapeutic ratio: Check level 12hrs after a dose on days 4-7 of treatment, then every week until dosage has remained constant for 4 weeks and every 3 months thereafter. **Lithium toxicity** (level >1.5mmol/L) maybe fatal.<br>• Lithium toxicity is worsened by sodium depletion, thus concurrent use of diuretics (especially thiazides) is hazardous and should be avoided.<br>• Maintain adequate sodium and fluid intake.<br>• Doses are initially divided throughout the day but once daily administration is preferred when serum-lithium concentration stabilised.<br>• Check thyroid and renal function at baseline and every 6mths.<br>• **Withdrawal:** reduce dose gradually over ≥ 4weeks (preferably over up to 3months) |

| **LORAZEPAM (ATIVAN-G)** | |
|---|---|
| Prep | Tab 1mg |
| *Anxiety*: **Adult** PO: 1-4mg daily in 2-3 divided doses with the largest dose taken at night, max.10mg daily. *Insomnia associated with anxiety*: 1-2mg at bedtime. *Premedication*: **Adult** 2-3mg the night before operation, 2-4mg 1-2hrs before operation. **Elderly (or debilitated)**: ½ adult dose or less. **Child** 5-13 yo: premedication: 0.5-2.5mg (50mcg/kg) ≥1hr before operation. | |
| Admin | ±  |
| Notes | • Short acting benzodiazepine.<br>• Not for anxiety/insomnia in children.<br>• For other indications, refer to relevant chapters. |

| **MIDAZOLAM (DORMICUM)** |
|---|
| Prep: Tab 7.5mg, Syrup 2.5mg/mL (Ex), Inj 5mg/mL(1mL), Inj 15mg/3mL(3mL) |
| *Insomnia, sedation in premedication before surgical or diagnostic procedures (give 30-60min before procedure)*: **Adult** PO: 7.5-15mg. **Elderly (or debilitated, hepatic/ renal impairment)**: ≤7.5mg. *Conscious sedation for procedures*: slow IV injection (approx. 2mg/min): 5-10min before procedure, initially 2-2.5mg (**Elderly** 0.5-1mg), increased if necessary in steps of 1mg (elderly 0.5-1mg), usual total dose 3.5-5mg (max.7.5mg), **elderly** max.3.5mg. **Child 1mth-18yo** PO 500mcg/kg (max.20mg) 30-60min before procedure. IV injection over 2-3min, 5-10min before procedure: **Child 1mth-6yo**, initially IV 25-50mcg/kg, increased if necessary in small steps (max.total dose 6mg); **Child 6-12yo**, initially IV 25-50mcg/kg, increased if necessary in small steps (max.total dose 10mg); **Child 12-18yo**, IV initially 25-50mcg/kg, increased if necessary in small steps (max.total dose 7.5mg).<br>*Sedative in combined anaesthesia*: IV injection 30-100mcg/kg repeated as required or by continuous IV infusion, 30-100mcg/kg/hr (elderly lower doses needed).<br>*Sedation in intensive care*: **Adult & >12yo,** slow IV injection, initially 30-300mcg/kg given in steps of 1-2.5mg every 2mins, then by slow IV injection or by continuous IV infusion (especially if 12-18yo) 30-200mcg/kg/hr; reduce dose (or reduce or omit initial dose) in hypovolaemia, vasoconstriction, or hypothermia; lower doses may be adequate if opioid analgesic also used. **Child 6mth-12yo,** slow IV injection initially 50-200mcg/kg over ≥3mins followed by 30-120mcg/kg/hr by continuous IV infusion |

| | |
|---|---|
| adjusted according to response. **Child 1-6mth** continuous IV infusion : 60 mcg/kg/hr by adjusted according to response. | |
| Admin |  <br>• Slow IV, continuous infusion<br>• When titrating the dose, allow ≥2mins after each increment. |
| Notes | • Start with lowest dose.<br>• Duration should be as short as possible, few days to max. 2 weeks. Certain cases may need extension. SHOULD NOT terminate abruptly.<br>• The maximum dose should not be exceeded because of the increased risk of CNS adverse effects, respiratory & cardiovascular depression.<br>• Avoid concomitant CNS depressants/alcohol.<br>• For other indications, refer to relevant chapters. |

| **PROCHLORPERAZINE (STEMETIL-G)** | |
|---|---|
| Prep | Tab 5mg, Inj 12.5mg/mL (1mL) |
| *Schizophrenia & other psychoses, mania* PO: 12.5mg 2times/day for 7 days adjusted at intervals of 4-7 days to usual dose of 75-100mg daily according to response. *Short term adjunctive management of severe anxiety*: PO: 15-20mg daily in divided doses, max. 40mg daily. *Psychoses, mania* Deep IM: 12.5-25mg 2-3 times daily. | |
| Admin | ±  <br>Deep IM |
| Notes | • Child not recommended. |

| **SULPIRIDE (DOGMATIL-G)** | |
|---|---|
| Prep | Tab 50mg, 200mg |
| *Schizophrenia*, **Adult & child >14yo**: 200-400mg 2times/day, max. 800mg daily in predominant negative symptoms; max. 2.4g daily in predominant positive symptoms. **Elderly (or debilitated)**: initially ¼-½ adult dose, increased gradually according to response. | |
| Admin | ±  |
| Notes | • Child under 14 yo is not recommended. |

| **TRIFLUOPERAZINE HYDROCHLORIDE (STELAZINE-G)** | |
|---|---|
| Prep | Tab 5mg |
| *Schizophrenia and other psychoses, short-term adjunctive management of psychomotor agitation, excitement, and violent or dangerously impulsive behaviour*, **Adult & Child**>12yo, initially 5mg 2times/day, increased by 5mg daily after 1wk, then at intervals of 3 days, according to response max. 40mg daily; **Elderly**: reduce initial dose by at least ½. *Severe anxiety*: **Adult & Child**>12yo: 2-4mg daily in divided doses, increased if necessary to 6mg daily (Max.); **Elderly:** reduce initial dose by at least ½. | |
| Admin |  |
| Notes | • For anxiety (non-psychotic): dose >6mg/day or duration >12wks may cause persistent irreversible tardive dyskinesias. |

| **ZOLPIDEM HEMIHYDRATE (STILNOX-G)** |
|---|

| | |
|---|---|
| Prep | Tab 10mg (A: Specialists only) |
| *Insomnia*: **Adult >18yo** PO 10mg at bedtime (**Elderly or debilitated)**: 5mg at bedtime. | |
| Admin | ±  |
| Notes | • For short-tem use only, from few days to max. 4 weeks.<br>• Use lowest effective dose and NOT to > max. 10mg/day. |

| **ZUCLOPENTHIXOL ACETATE (CLOPIXOL ACUPHASE)** | |
|---|---|
| Prep | Inj 50mg/mL |
| *Initial treatment of acute psychoses, including mania and exacerbations of chronic psychoses*: IM 50-150mg (**elderly** 50-100mg), if necessary repeated after 2-3 days (1 additional dose may be needed 1-2 days after the 1st injection), max. cumulative dose 400mg in 2 weeks and max. 4 injections; Max. duration of treatment 2 wks. | |
| Admin | Deep IM (into gluteal muscle / lateral thigh) |
| Notes | • If maintenance necessary, change to oral antipsychotic 2-3 days after the last injection.<br>• Do not store >30°C, protect from light. |

| **ZUCLOPENTHIXOL DIHYDROCHLORIDE (CLOPIXOL)** | |
|---|---|
| Prep | Oral drops 20mg/mL (20mL) |
| PO 10-50mg/day. In moderate to severe cases initially 20mg/day, increased if necessary, by 10-20mg every 2-3 days to ≥75mg daily.<br>*Chronic schizophrenia & other chronic psychoses*: maintenance 20-40mg/day. *Agitation in oligophrenic*: 6-20mg/day, if necessary increased to 25-40mg/day. *Agitation and confusion in senile patients*: 2-6mg/day (preferably given late in the day). If necessary increased to 10-20mg/day. | |
| Admin | ±  |
| Notes | • 1 drop = 1mg<br>• Change to PO: mg Clopixol IM daily x2=mg Clopixol PO daily<br>• Fridge item |

## N06 PSYCHOANALEPTICS

| **AGOMELATINE (VALDOXAN)** | |
|---|---|
| Prep<br>Policy | Tab 25mg<br>(A*: Psychiatrist only, 50 pts per year) |
| Dose:<br>25mg once daily at bedtime; if no improvement after 2 wks, increased to 50 mg once daily. | |
| Admin | ±  |
| Notes | • Contraindicated in pts with hepatic impairment.<br>• Caution in elderly (≥ 65 years) and pts with renal impairment.<br>• Not recommended for pts under 18 years.<br>• No dosage tapering is needed on treatment discontinuation. |

| **AMITRIPTYLINE HYDROCHLORIDE (LAROXYL-G)** | |
|---|---|
| Prep | Tab 25mg |
| Dose: *Depression, including that accompanied by anxiety*: **Adult** initially 25mg 3 times/day, increased gradually (preferably in late afternoon and/or bedtime) as necessary to max 150mg/day; Hospitalised patient: initially 100mg/day, increased gradually to 200-300mg/day; Adolescent and elderly: 10mg 3 times/day with 20mg at bedtime may be satisfactory. Maintenance dose: usually 25mg 2-4 times/day; **Child** < 12 years not recommended. | |
| Admin | ±  |
| Notes | • The use of higher-dose was associated with an increased risk of SUDDEN CARDIAC DEATH.<br>• Do not use in combination with MAOIs unless specialist supervision is present.<br>• Not recommended during acute recovery phase following MI and in the presence of acute CHF.<br>• Caution in pts with a history of seizures or cardiovascular diseases (e.g. MI, CHF), urinary retention, narrow angle glaucoma or increased IOP.<br>• For other indications, refer to chapter G04 Urologicals. |

| **ATOMOXETINE HYDROCHLORIDE (STRATTERA)** | |
|---|---|
| Prep<br>Policy | Cap 10mg, 18mg, 25mg, 40mg & 60mg<br>(A*: Psychiatrist, Child Psychiatrist & Family Medicine Specialist only; 100 pts per year, to be shared with methylphenidate) |
| Dose: **Child & adolescent** ≤ 70kg: initially 0.5mg/kg for minimum 7 days prior to upward dose titration, maintenance dose 1.2mg/kg/day; **Child & adolescent** > 70kg and **Adult**: initially 40mg/day for minimum 7 days prior to upward dose titration, maintenance dose 80mg/day. Max 100mg/day. | |
| Admin | ±  |
| Notes | • Can be administered as a single daily dose in morning or twice daily evenly divided doses in morning and late afternoon or early evening.<br>• Can be discontinued without tapering the dose.<br>• Pts with moderate hepatic insufficiency (Child-Pugh Class B): reduce to 50% of the usual dose; severe hepatic insufficiency (Child-Pugh Class C): reduce to 25% of the usual dose.<br>• No dosage adjustment in ESRD. |

| **CLOMIPRAMINE HYDROCHLORIDE (ANAFRANIL-G)** | |
|---|---|
| Prep | Tab 25mg |
| Dose: *Depression*: initially 25mg daily, increased gradually as necessary to 150mg daily in divided doses or as a single dose at bedtime, max 300mg daily; **Elderly**: initially 10mg daily, increased carefully over approx. 10 days to 30-75mg daily. *OCD*: initially 25mg daily, increased gradually as necessary to 100-150mg daily, max 250mg daily. | |

| | |
|---|---|
| Admin |  |
| Notes | • Treatment should only be started after 3 weeks stopping an MAOI and vice versa.<br>• Extreme caution in elderly and patients with cardiovascular disorders, esp. those with cardiovascular insufficiency, conduction disorders or arrhythmias. Monitoring of cardiac function and ECG is indicated.<br>• There may be a risk of QTc prolongation and torsades de pointes. Thus, hypokalaemia (if any) should be treated before treatment initiation. |

| **DOSULEPIN or DOTHIEPIN HYDROCHLORIDE (PROTHIADEN-G)** | |
|---|---|
| Prep | Tab 25mg & 75mg |
| Dose:<br>*Depressive illness*: initially 25mg 3 times/day, increased gradually in steps of 25-50mg at intervals of 1-2weeks. Maintenance 150mg daily. Max 200mg daily; **Elderly** (or debilitated) 50-75mg daily. | |
| Admin | ±  |
| Notes | • Not recommended in children under 16 years.<br>• Up to 150mg of the dose may be given as a single night-time dose.<br>• Reduce dose with caution in pts with impaired liver or renal function.<br>• Contraindicated in hepatic failure. |

| **ESCITALOPRAM OXALATE (LEXAPRO)** | |
|---|---|
| Prep<br>Policy | Tab 10mg<br>(A*/PPP: Psychiatrist & Family Medicine Specialist: Prof. Madya Dr. Khairani, Dr. Azimah & Dr. Aida only) |
| Dose:<br>*Major depressive episodes, generalised anxiety disorder & OCD*: 10mg once daily, increased if necessary to max 20mg daily. *Panic disorder*: initially 5mg once daily, increased to 10mg daily after 7 days, max 20mg daily. *Society anxiety disorder*: initially 10mg once daily, adjusted after 2-4weeks, max 20mg daily.<br>**Elderly** (or debilitated): initially ½ adult dose, lower maintenance dose may be sufficient. | |
| Admin | ±  |
| Notes | • For panic disorder, maximum effectiveness is reached after about 3 months.<br>• Not to use in children and adolescent < 18 years.<br>• No dosage adjustment in mild or moderate renal impairment; caution in severely reduced renal function (CLCr < 30mL/min).<br>• Reduced hepatic function: initially 5mg daily for first 2 wks, may be increased to 10mg daily.<br>• Discontinuation: reduce dose gradually over a period of at least 1-2 wks. |

| **FLUOXETINE HYDROCHLORIDE (PROZAC-G)** | |
|---|---|
| Prep<br>Policy | Cap 20mg<br>A: Specialist only |
| Dose:<br>*Depressive illness*: 20mg/day, increased after 3-4weeks if necessary, max 60mg daily; | |

| | |
|---|---|
| **Elderly** usual max 40mg daily but 60mg daily can be used.<br>*Obsessive-compulsive disorder*: 20-60mg/day, increased gradually if necessary, max 80mg daily; **Elderly** usual max 40mg daily but 60mg daily can be used.<br>*Pre-menstrual dysphoric disorder*: initially 20mg/day up to 6mths then reassess for the benefit of continued therapy. | |
| Admin | ±  |
| Notes | • Long duration of action. Consider the long half-life of fluoxetine when adjusting dosage (or in overdosage).<br>• Dosage tapering is unnecessary in most patients.<br>• Lower or less frequent dose in pts with hepatic impairment. |

| **FLUVOXAMINE MALEATE (LUVOX/-G)** | |
|---|---|
| Prep | Tab 50mg & 100mg |
| Policy | A: Specialist only |
| Dose:<br>*Depression*: initially 50 or 100mg in the evening, increased gradually if necessary to max 300mg daily. Usual effective dose 100mg/day. *Prevention of recurrence of depression*: 100mg once daily. *Obsessive-compulsive disorder*: **Adult** initially 50mg/day for 3-4 days, increased gradually after some weeks to max 300mg daily. Usual effective dose 100-300mg/day; **Child** (> 8 years): initially 25mg/day, increased in steps of 25mg every 4-7 days to max 200mg daily (over 50mg in 2 divided doses). | |
| Admin | ±  with water and without chewing. |
| Notes | • Doses up to 150mg can be given as single dose in the evening. Total daily dose > 150mg in 2 or 3 divided doses.<br>• Antidepressant should be continued for at least 6 months after recovery from a depressive episode.<br>• If no improvement in OCD within 10 wks, treatment should be reconsidered.<br>• Start on low dose and monitored carefully in pts with hepatic or renal insufficiency.<br>• Concomitant use of fluvoxamine and theophylline or aminophylline should be avoided.<br>• Treatment can be started 2 weeks after stopping an irreversible MAOI and the following day for a reversible MAOI. |

| **IMIPRAMINE HYDROCHLORIDE (TOFRANIL-G)** | |
|---|---|
| Prep | Tab 25mg |
| Dose:<br>Depressive illness: initially up to 75mg daily in divided doses, increased gradually to 150mg. Max 300mg daily (in more severely hospitalised patients); **Elderly** initially 10mg daily, increased gradually to 30-50mg daily. If desired, maintenance dose administered as a single dose, at bedtime. | |
| Admin |  |
| Notes | • Up to 150mg may be given as a single dose at bedtime.<br>• Treatment should only be started after 3 weeks stopping an MAOI and vice versa. |

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|---|---|
| | • Less sedating properties as compared to amitriptyline and dosulepin (dothiepin).<br>• For other indications, refer to chapter G04 Urologicals. |

| **MEMANTINE HYDROCHLORIDE (EBIXA)** | |
|---|---|
| Prep<br>Policy | Tab 10mg<br>A*: Psychiatrist & Neurologist only<br>( 40 pts [for Psy] & 20 pts [for Neuro] per year) |
| Dose:<br>*Moderate to severe dementia in Alzheimer's disease*: initially 5mg/day, increased in steps of 5mg at weekly intervals over first 3 wks, from 4th wk thereafter continue with maintenance dose 20mg/day. Max 20mg once daily; **Elderly** (> 65yrs) 20mg once daily. | |
| Admin | ±  |
| Notes | • Should be administered once daily and taken at the same time every day.<br>• No dose adjustment in mild renal impairment; 10mg/day in moderate or severe renal impairment and increased accordingly.<br>• No dose adjustment in mild or moderate hepatic impairment; not recommended in pts with severe hepatic impairment.<br>• Caution in pts with epilepsy or former history of convulsions. |

| **METHYLPHENIDATE HYDROCHLORIDE (RITALIN)** | |
|---|---|
| Prep<br>Policy | Tab IR 10mg, Cap LA 20mg<br>(A*/PPP: Psychiatrist, Pediatrician & Family Medicine Specialist only; 100 pts per year, to be shared with atomoxetine) |
| Dose:<br>*Attention-Deficit Hyperactivity Disorder (ADHD)*: Tab IR: **Adult** 10mg-60mg/day, usual dose 20-30mg/day in 2-3 divided doses, max 60mg/day; **Child** ≥ 6yrs initially 5mg once or 2 times/day (at breakfast and lunch) with weekly increments of 5-10mg, max 60mg/day in 2-3 divided doses. Cap LA: 20mg OM, usual dose 20-30mg once daily. *Narcolepsy*: Tab IR: 10-60mg daily in divided doses before meals, usual dose 20-30mg daily in divided doses. | |
| Admin | Tab IR:  Cap LA: ±  |
| Notes | • Cap LA: swallow whole, do not chew, crush or divide the contents of the capsule. The capsule may be carefully opened and the beads sprinkled on a tablespoon of soft food (e.g. apple sauce). Then swallowed immediately without chewing. The food should not be warm.<br>• Direct conversion: IR 10mg 2 times/day = LA 20mg once daily.<br>• Dosage should be individualized to the patient's needs and responses.<br>• If effect of the drug wears off too early in the evening, a small evening dose of the normal tab may help.<br>• Pts who are unable to sleep if medication is taken late in the day should take the last dose before 6p.m.<br>• Discontinue if no response after 1 mth, also suspend periodically to assess child's condition (usually discontinued during or after puberty). Caution in elderly (≥ 65 years) and pts with renal impairment.<br>• Monitor growth if prolonged treatment. |

| **METHYLPHENIDATE HYDROCHLORIDE (CONCERTA)** | |
|---|---|
| Prep | Tab XR 18mg, 27mg & 36mg |
| Policy | As above |
| Dose: *ADHD*: Pt new to methylphenidate*:* **Adult** > 18 yrs initially 18mg or 36mg OM, adjusted at weekly intervals to max 108mg daily; **Child** 6-18 yrs initially 18mg OM, increased if necessary at weekly intervals by 18mg, max 54mg daily. Pt currently using methylphenidate: 10-60mg/day 2 or 3 times/day. | |
| Admin | ± swallowed whole, do not chew, divide or crush. |
| Notes | • Conversion:<br>IR 5mg 2 or 3 times/day = XR 18mg OM<br>IR 10mg 2 or 3 times/day = XR 36mg OM<br>IR 15mg 2 or 3 times/day = XR 54mg OM<br>IR 20mg 2 or 3 times/day = XR 72mg OM<br>• Contraindicated during Tx with MAOIs & within a minimum of 14 days following discontinuation of MAOI. |

| **MIRTAZAPINE (REMERON)** | |
|---|---|
| Prep | SolTab 15mg & 30mg |
| Policy | (A*: Psychiatrist only) |
| Dose: *Major depression*: **Adult** > 18 yrs initially 15mg ON, increased if necessary. Usual effective dose 15-45mg daily. | |
| Admin | ± placed on tongue, disintegrate rapidly and can be swallowed without water. |
| Notes | • Tx should be stopped if no response within 2-4 wks after the max dose.<br>• Recommended to discontinue gradually to avoid withdrawal symptoms.<br>• Clearance may be decreased in moderate to severe renal impairment and hepatic impairment.<br>• Store in original package to protect from light and moisture. |

| **RIVASTIGMINE (EXELON/-G)** | |
|---|---|
| Prep | Cap 1.5mg, 3mg, 4.5mg & 6mg, Syrup 2mg/mL (120mL), Patch 5 (4.6mg/24hrs) & 10 (9.5mg/24hrs) |
| Policy | (Cap: A*/PPP: Neurologist, Psychiatrist & *Klinik Lanjutan Strok, PPP* only; Patch & Syrup: A*: Neurologist & Psychiatrist only) |
| Dose: *Mild to moderate dementia in Alzheimer's disease/ in Parkinson's disease*: PO: initially 1.5mg 2 times/day, increased in steps of 1.5mg 2 times/day at intervals of at least 2wks according to response and tolerance. Maintenance dose 1.5-6mg 2 times/day. Max 6mg 2 times/day; Patch: initially apply 4.6mg/24hrs, removing after 24hrs and apply a replacement patch on a different area; if well tolerated increased to 9.5mg/24hrs after at least 4wks. | |
| Admin | Cap/Syrup: |
| Notes | • Patch: apply on clean, dry, non-hairy, non-irritated skin on back, upper arm, or chest. Rotate site of application and avoid using the same area within 14 days. It can be used in everyday situations, including bathing and during hot weather. However, the patch should not be exposed to |

| | |
|---|---|
| | external heat sources (excessive sunlight, saunas, solarium) for long period of time.<br>• No dose adjustment in pts with renal or hepatic impairment.<br>• If treatment interrupted for longer than several days, reinitiated with lowest dose and increased gradually.<br>• Switching from oral to patch: patient taking 3-6mg daily should be switched to 4.6mg/24hrs patch; if pt not stable or well tolerated 9mg daily, should be switched to 4.6mg/24hrs patch, while those taking tolerate well with 9mg daily should switched to 9.5mg/24hrs patch; patients taking 12mg daily should switched to 9.5mg/24hrs patch. The first patch should be applied on the day following the last oral dose. |

| **SERTRALINE HYDROCHLORIDE (ZOLOFT-G)** | |
|---|---|
| Prep | Tab 50mg |
| Policy | (A/PPP: Specialist only) |
| Dose:<br>*Depressive illness*: initially 50mg once daily, increased if necessary by increments of 50mg at intervals of at least 1 wk. Max 200mg daily; usual maintenance dose 50mg daily; **Elderly** initially 12.5-25mg once daily. *Obsessive-compulsive disorder*: **Adult and child (> 12yrs)** initially 50mg once daily, increased in steps of 50mg at intervals of at least 1 wk. Max 200mg daily. **Child (6-12yrs)** initially 25mg once daily, increased to 50mg daliy after 1wk, further increased if necessary in steps of 50mg at intervals of at least 1 wk. Max 200mg daily. *Panic disorder, post-traumatic stress disorder and social phobia*: initially 25mg once daily, increased after 1 wk to 50mg once daily; if response is partial and if well tolerated, increased in steps of 50mg at intervals of at least 1 wk. Max 200mg daily. | |
| Admin | ±  |
| Notes | • Should be administered once daily, either in the morning or evening.<br>• Doses of 150mg or more should not be used for periods exceeding 5 weeks. |

## N07 OTHER NERVOUS SYSTEM DRUGS

| **BETAHISTINE DIHYDROCHLORIDE (BETASERC)** | |
|---|---|
| Prep | Tab 24mg |
| Dose:<br>*Vertigo, tinnitus and hearing loss associated with Ménière's Syndrome*: 24-48mg daily in divided doses. | |
| Admin |  |
| Notes | • No dose adjustment in elderly, renal impairment or hepatic impairment.<br>• Improvement may take up to 2 wks and the best results are sometimes obtained after a few months. |

| **CINNARIZINE (STUGERON-G)** | |
|---|---|
| Prep | Tab 25mg |
| Dose:<br>*Vestibular disorders*: 25mg 3 times/day. *Motion sickness*: 25mg 2 hr before travel, ½ | |

| | |
|---|---|
| tab every 8 hrly during journey. *Peripheral vascular disease*: 75mg 2-3 times/day. **Child 5-12 yrs**: ½ adult dose. | |
| Admin |  |
| Notes | • May cause drowsiness, should not drive or operate machine. |

| **FLUNARIZINE HYDROCHLORIDE (SIBELIUM-G)** | |
|---|---|
| Prep | Cap 5mg |
| Dose:<br>*Vertigo & migraine prophylaxis*: initially 10mg ON (<65yrs), 5mg ON (>65yrs); maintenance: decreased dose until pt can maintain at the same daily dose for 5 days/week with 2 days drug-free. | |
| Admin | ±  |
| Notes | • For vertigo, the initial treatment should not be given longer than needed for symptom control, which takes ~ < 2 mths.<br>• If no significant improvement is observed after 1 mth for chronic vertigo or after 2mths for paroxysmal vertigo, discontinue treatment.<br>• Discontinue after 2 mths if no significant improvement, or if fatigue increases progressively, therapeutic effects wane, extrapyramidal or depressive symptoms emerge, esp in elderly.<br>• Even if migraine prophylactic maintenance treatment is successful & well tolerated, the drug should be stopped after 5 mths & re-initiate only if pt relapses.<br>• Caution: may cause extrapyramidal & depressive symptoms and reveal parkinsonism, especially in elderly. |

| **NEOSTIGMINE METHYLSULPHATE (PROSTIGMINE-G)** | |
|---|---|
| Prep | Inj 2.5mg/mL (1mL) |
| Dose:<br>*Myasthenia Gravis*: IM/SC: 1-2.5mg at suitable intervals throughout the day (usual total daily dose 5-20mg); **Neonates** 50-250mcg every 2-4 hrs, ½ hr before feed; **Older Child** 200-500mcg as required. *Antagonist to nondepolarising neuromuscular blockage*: Slow IV (over 1 min): **Adult** 2-3mg with atropine sulphate 0.6-1.2mg, max 5mg; **Child** 0.05mg/kg/dose and atropine sulphate 0.02mg/kg/dose, max 2.5mg. *Intestinal atony*: **Prophylaxis** IM/SC 250mcg before or immediately after op, repeated every 4-6 hrs for 2-3 days; **treatment** IM/SC/IV 500mcg at interval 4-5 hrly. *Urinary retention*: **Prophylaxis** 250mcg; **treatment** IM/SC 500mcg & apply heat to lower abdomen, continue 500mcg every 3 hrly for at least 5 Inj. | |
| Admin | May be administered undiluted by slow IV over several mins, IM or SC. |
| Notes | • 0.5mg IV = 1.0-1.5mg IM or SC.<br>• CLCr 10-50mL/min: 50% of normal dose; CLCr <10mL/min: 25% of normal dose<br>• May used with atropine to prevent occurrence of muscarinic effects. |

| **PYRIDOSTIGMINE BROMIDE (MESTINON)** | |
|---|---|
| Prep | Tab 60mg |
| Dose:<br>*Myasthenia Gravis*: **Adult** 60-180mg 2-4 times/day, usual total daily dose 300-1200mg; **Child** initially 30mg (<6yrs) or 60mg (6-12yrs), increased gradually in increments of 15- | |

| | |
|---|---|
| 30mg daily, usual total daily dose 30-360mg; **Neonate** 5mg every 4-6 hrs. | |
| Admin |  |
| Notes | • Full effect appears gradually, usually within 15-30 mins.<br>• It is inadvisable to exceed a total daily dose of 450mg in order to avoid acetylcholine receptor down regulation.<br>• Immunosuppressant is usually considered if the dose exceeds 360mg daily. |

# CLASS P ANTIPARASITIC PRODUCTS, INSECTICIDES & REPELLANTS

## P01 ANTIPROTOZOALS

- Stand-by treatment : children and their carers visiting remote, malarious areas for prolonged periods should carry standby treatment if they are likely to be more than 24 hrs away from medical care.

| **ARTEMETHER AND LUMEFANTRINE (RIAMET)** | |
|---|---|
| Prep | Artemether 20mg/ Lumefantrine 120mg Tab (Ratio 1:6) |
| Policy | Treatment of acute, uncomplicated malaria due to Plasmodium Falciparum. Can be used in infants >5kg. |
| Dose:<br>**Adult:** *Blood schizontocide for treatment of acute uncomplicated infections due to plasmodium Falciparum:* 4 tablets as a single dose at time of initial diagnosis, then 8, 24 and 48 hrs later ( Total course 16 tabs). *Treatment in multi-drug resistant areas and non immune patients*: 3 day course: 4 tabs as single dose, repeat after 8 hrs and then 2 x daily on the next 2 days ( Total course 24 tabs)<br>**Child:** *Usual treatment (including in multi-drug resistant areas and non immune patients) & stand-by emergency treatment:* **25-35kg** 3 tab, **15-25 kg** 2 tab, **5-15kg** 1 tab. To be taken as a single dose during onset of symptoms, repeat dose after 8 hr, then 2x daily for next 2 days.<br>(Total course for **25-35kg:** 18 tabs; Total course for **15-25 kg:** 12 tabs; Total course for **10-15kg:** 6 tabs) | |
| Admin | 100% absorption after a high-fat meal. However since patients with acute malaria are frequently averse to food, dose may be taken with fluids. Encourage patients to resume normal eating as soon as food can be tolerated since this improves drug absorption. In the event of vomiting within 1 hr of administration, repeat dose. Tablets may be crushed just before administration. |

| **CHLOROQUINE** | |
|---|---|
| Prep | Chloroquine Phosphate 250mg Tab (=Base 150mg) |
| Dose (expressed as base)<br>*Acute attack of malaria*, **Adult** 600mg (4 tabs) , then 300mg (2 tabs) at 6, 24 and 48 hrs after first dose. **Child** 10mg/kg, then 5mg/kg at 6, 24, 48 hrs after first dose ( Total course: 4 doses)<br>*For prophylaxis,* **Adult** 300mg (2 tabs) on same day each week. Start 1-2 wks prior to exposure; continue for 4 wks after leaving endemic area. | |
| Admin | |
| Notes | • If suppressive therapy is not begun prior to exposure, double the initlal loading dose to 600mg base, given in 2 divided dose 6 hrs aprt, followed by usual regimen. Chloroquine is no longer recommended for treatment of Falciparum malaria. |

| **METRONIDAZOLE** | |
|---|---|
| Prep | Suspension 200mg/5mL (100mL), 200mg & 400mg Tab |
| Dose: *Invasive intestinal amoebiasis (including liver abscess):* 800mg every 8 hrs for 5 days in intestinal infection ( 5-10 days for extra intestinal) *Trichomonas vaginalis:* 2g as a single dose OR 500mg every 12 hrs x 7 days. *Giardiasis:* 2 g daily for 3 days or 400mg 3 x daily for 5 days | |
| Notes | • May potentiate effects of anticoagulants. Do not co-administer with alcohol (disulfiram-like effects) |

| **PENTAMIDINE ISETHIONATE** | |
|---|---|
| Prep<br>Policy | Pentamidine Isethionate 300mg /vial (4mg pentamidine isethionate = 2.3mg pentamidine base)<br>Only for treating P Carinii pneumonia and Leishmania donovani infection. |
| Dose: *As alternative 1st line treatment for Pneumocystis Carinii infection in AIDS patients; 2nd line for Pneumocystis Carinii in non-Aids Patients:* 4mg/kg once daily for 14 days(slow infusion); *2nd line treatment of Leishmaniasis (except Leishmania aethiopica where it can be used as 1st line):* (Visceral) : 3-4mg/kg on alternate days ( 3x/wk) to max of 10 injections ; (Cutaneous): 3-4mg/kg once or 2x weekly until condition resolves. | |
| Admin | Dissolve 300mg vial with 3-5mL of Water for Injection. Required dose to be diluted further in 50-250mL of D5% or NS. Infused over at least 60 mins. |
| Notes | • Must be given in a slow intravenous infusion in a supine position to reduce sudden severe hypotension. AVOID direct bolus or rapid administration. Measure baseline blood pressure before first dose and monitor at hourly intervals after first dose until stable.<br>• Reconstituted solutions at concentrations of 100mg/mL and 60mg/mL are chemically stable for 48 hrs when stored 2-8 celcius and room temperature under fluorescent light.<br>• If diluted to 1mg/mL and 2.5mg/mL in NaCl and D5, use within 24 hrs. |

| **QUININE DIHYDROCHLORIDE** | |
|---|---|
| Prep | Injection Quinine Dihydrochloride 600mg/2mL<br>Quinine (anhydrous base) 100mg = Quinine hydrochloride 122mg |
| Dose: *Severe or complicated malaria:* Loading dose: IV Infusion over 4 hrs of 20mg/kg Quinine DiHCl (16.7mg base). Maintenance Dose : IV Infusion over 4 hrs of 10mg/kg Quinine (8.3mg base/kg), 8-12 hrly. If IV Infusion not possible, may give by IM Injection. | |
| Admin | IV Infusion over 4 hrs : diluted in 250-500mL of diluent (?) |
| Notes | • Reduce dose by half in hepatic or renal failure .<br>• Decrease dose to $^{1}/_{3}$ if to continue IV therapy beyond 72 hrs. |

| **SULPHADOXINE & PYRIMETHAMINE (FANSIDAR)** | |
|---|---|
| Prep | Sulphadoxine 500mg and Pyrimethamine 25mg tablet |
| Dose: *Acute Infection of Toxoplasmosis:* Loading Dose: Pyrimethamine 100-200mg ( Fansidar 4 tab stat), then 50-100mg/day + Sulfadiazine (Fansidar 1 tab 2 x dly) in combination therapy with Folinic Acid *(For more information, please see Anti Infective Guideline* | |

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|---|---|
| *2012 Pg 118)* | |
| Admin | ±  |
| Notes | • The drug should be discontinued at first appearance of skin rash, significant decreases of blood cells, a bacterial fungal superinfection. |

## P02 ANTHELMINTICS

| **ALBENDAZOLE** | |
|---|---|
| Prep | 200mg/5mL suspension (10mL), 200mg Tab |
| Dose:<br>*Roundworm, whipworm, hookworm, pinworm* : **Adults and Children > 2 yrs**: Oral 10mL or 2 tablets (400mg) single dose; **Children < 2 yrs:** 5mL or 1 tab ( 200mg) as single dose. *Threadworm (Strongyliodiasis):* **Adults and Children > 2 yrs**: Oral 10mL or 2 tabs (400mg) single dose, 3 consecutive days. **Children< 2 yrs:** 5mL or 1 tab (200mg) as a single dose for 3 days. | |
| Admin |  Tablet can be chewed or crushed and mixed with food. |
| Notes | • *Not recommended for < 1 yr old.* |

## P03 ECTOPARASITICIDES

- **Head Lice**
  1) *Dimeticone* coats head lice and interferes with water balance in lice by preventing the excretion of water; It is less active against eggs
  2) *Malathion :* Do not repeat application in less than a week or do not repeat application for more than 3 consecutive weeks since likelihood of eradication of lice is not increased.
  *In general a course of treatment for head lice should eb 2 applications of product 7 days apart. All affected household members should be treated simultaneously.*
- **Scabies**
  1) *Permethrin* 2) *Lindane* reserved for second line.
  Application of Crotamiton can help to control itching after treatment. Topical corticosteroid may help to reduce itch and inflammation. Oral antihistamine may help with night itching.
  Patient with hyperkeratotic scabies may need 2-3 consecutive day application to ensure enough medication penetrates the skin crusts.

| **MALATHION (A-LICE)** | |
|---|---|
| Prep | Malathion 1% Lotion, 30mL |
| Dose:<br>*Lice:* Wet hair. Apply sufficient quantity of shampoo to roots of hair and scalp and work up a rich lather. Pay special attention to parting, back of neck and around ears, webs of fingers and toes and end of nails. Leave on for at least 10 minutes before rinsing. A second application is recommended after after a week of first application. | |
| Admin | Remove dead lice and eggs with a fine-toothed comb. If nits persist, soak hair with equal parts of water and vinegar to loosen nits. |
| Notes | • Not to be used in infants or children < 2 years. |

| **DIMETHICONE (LICE CLEAR)** | |
|---|---|
| Prep | Dimethicone topical gel, 70mL |
| Dose:<br>*Lice:* Apply to DRY hair and scalp. Allow to dry naturally. Wait for 10 minutes before combing out lice, eggs and nits. | |
| Admin | Short hair 30-60mL; medium 60-90mL; long hair 90-120mL.<br>While hair and scalp are wet, separate hair every 1" to 1½". Place teeth of comb as close to scalp as possible and pull comb away from the head through to the ends of hair. Eggs are normally found on hair shaft near to hair roots. Two or more washings may be needed to completely remove Lice Clear. Wash all comb and clips in hot ( > 55 celcius) for 5-10 minutes. Dispose all tissues or paper towels by sealing in plastic bag and dispose immediately. |
| Notes | • Caution in infants or children < 6 months. |

| **PERMETHRIN (A-SCABS)** | |
|---|---|
| Prep | Permethrin 5.0%, 30mL Lotion |
| Dose: *Scabies:* Apply and leave it for **8-14 hours** then rinse off | |
| Admin | Ensure that skin is clean, dry and cool before treatment. Apply from head to soles of feet. Hairline, neck, temple and forehead may be infested in infants and geriatrics. |
| Notes | • One application is normally curative. Persistent pruritus may be experienced after treatment even though mites have been killed. This is because it takes time for allergic reaction to subside.<br>• Safe for children > 2 yrs old |

| **LINDANE OR GAMMA BENZENE (SCABOMA)** | |
|---|---|
| Prep | Lindane 1% Lotion, **100 mL** |
| Dose:<br>*Scabies:* Wash the Lindane Lotion completely off after 8 to 12 hours. Never leave Lindane Lotion on the skin for more than 12 hours. Warm, but not hot water can be used. Lindane Lotion will not kill any more scabies after 8 to 12 hours, but may cause serious health problems. | |
| Admin | Oils may enhance absorption. Simultaneous use of creams, ointments or oils should be avoided. Use as second line. Use with caution in patients whose weight is < 50kg.<br>Put Lindane Lotion under fingernails after trimming the fingernails short, because scabies are very likely to remain there. A toothbrush can be used to apply the Lindane Lotion under the fingernails. Immediately after use, the toothbrush should be wrapped in paper and thrown away. Use of the same brush in the mouth could lead to poisoning.<br>Use only a single application, applied as a very thin layer over all skin from the neck down.<br>Do not use any covering over the applied Lindane Lotion that does not breathe, like diapers with plastic lining, plastic clothes, tight clothes, or blankets. |

# R. RESPIRATORY SYSTEM

## RO1. NASAL PREPARATIONS

| **ADRENALINE 1:1000** | |
|---|---|
| Prep | Solution 1mg/ml (Extemporaneous) |
| *For use in otorhinological surgery.* | |
| Notes | • For other indications, refer to chapter CO1 Cardiac Therapy. |

| **ALKALINE NASAL DOUCHE** | |
|---|---|
| Prep | Solution Sodium bicarbonate (Extemporaneous) |
| *For use as nasal irrigation.* As directed. | |
| Admin | Bend over the sink with head turned slightly to 1 side and squirt the solution into the nostril that is higher. Aim the stream toward the back of head, NOT the top of head. Keep mouth open. The solution should flow into 1 nostril and out the other. It is fine if swallow a small amount. Once all the solution has run out of nose, blow nose gently. |
| Notes | • 1 teaspoon of sodium bicarbonate to be mixed with 250ml sterile water. Use with syringe.<br>• Alternative : NeilMed® Sinus Rinse Kit available in Kedai Farmasi |

| **BECLOMETHASONE DIPROPINATE (BECONASE)** | |
|---|---|
| Prep | Nasal spray 50 mcg/spray |
| *Prophylaxis and treatment of perennial and seasonal allergic rhinitis and vasomotor rhinitis:* Intranasal:**Adult & Child** > 6 years old 100 mcg (2 sprays) into each nostrils 2 times/day or 50 mcg (1 spray) into each nostril 3-4 times/day (Max 200 mcg per nostril/day). | |
| Notes | • Not recommended for child below 6 years old<br>• When symptoms controlled, reduce to 50mcg (1 spray) into each nostril 2 times/day |

| **BISMUTH SUBNITRATE, IODOFORM & LIQUID PARAFFIN (B.I.P.P. PASTE)** | |
|---|---|
| Prep | Extemporaneous Paste |
| *For packing cavities after ear, nose or oropharyngeal surgery, and to pack nasal cavities in acute epistaxis.* | |
| Notes | • Impregnate on sterile gauze<br>• Discontinue use if erythematous rash occurs |

| **CICLESONIDE (OMNARIS)** | |
|---|---|
| Prep<br>Policy | Nasal Spray 50 mcg/spray (120 doses)<br>(A*: ENT Specialists Only) |
| *Seasonal and perennial allergic rhinitis*: Intranasal: **Adult & Child** (>12 years old) 100 mcg (2 sprays) into each nostril 1 time/day (Max 100 mcg per nostril/day). | |

| **FLUTICASONE FUROATE (AVAMYS)** | |
|---|---|
| Prep<br>Policy | Nasal Spray 27.5 mcg/spray (120 doses)<br>(A*: ENT Specialists Only) |
| *Treatment of nasal symptoms (rhinorrhea, nasal congestion, nasal itching and sneezing) and ocular symptoms (itching/burning, tearing/watering and redness of the eye) of seasonal and perennial rhinitis*: Intranasal: **Adult & Adolescents** (>12 years old) 55 mcg (2 sprays) into each nostrils 1 time/day. **Child** (2-11 years old) 27.5 mcg (1 spray) in each nostril, patient not responding adequately may use 55 mcg (2 sprays) in each nostril 1 times/day. Once adequate control of symptoms achieved, dose reduction to 27.5 mcg (1 spray) into each nostrils is recommended. | |
| Notes | • Not recommended for child below 2 years old<br>• Onset of action 8 hours, may take several days to achieve maximum benefit. |

| **FEXOFENADINE 60MG/PSEUDOEPHEDRINE SULPHATE 120MG (TELFAST-D)** | |
|---|---|
| Prep<br>Policy | Tablet fexofenadine HCL 60mg/ pseudoephedrine HCL 120mg<br>(A*: ENT Specialist Only) |
| *Relief of symptoms associated with seasonal allergic rhinitis (sneezing, rhinorrhea, itchy nose/palate and or throat, itchy/watery/red eyes, and nasal congestion.* **Adult & Adolescents** (>12 years old) 1 tablet 2 times/day. | |
| Notes | • 1 tablet 1 time/day in patients with decreased renal function<br>• Do not chew/crush |

| **LORATADINE 5 MG/PSEUDOEPHEDRINE 120MG (CLARINASE)** | |
|---|---|
| Prep | Tablet loratadine 5mg/ pseudoephedrine 120mg |
| *Relief of symptoms associated with allergic rhinitis and the common cold including nasal congestion , sneezing, rhinorrhea, pruritis and lacrimation:* Oral: **Adult** & **Child** (> 12 years old) 1 tab 2 times/day. | |
| Admin | ±  |
| Notes | • Not recommended for child below 12 years old<br>• May cause drowsiness, advice patient not to drive or operate machinery if affected. It may potentiate the effects of alcohol. |

| **MENTHOL 1.6% INHALATION** | |
|---|---|
| Prep | p-Menthan-3-ol; 2-Isopropyl-5-methylcyclohexanol<br>Solution Crystal 1.6% 100ml (Extemporaneous) |
| *Relief symptoms of bronchitis, sinusitis and similar conditions*: Inhalation: Add 1 teaspoon to a bowl of hot (not boiling) water and inhale the vapour. | |

| **MENTHOL CRYSTAL** | |
|---|---|
| Prep | p-Menthan-3-ol; 2-Isopropyl-5-methylcyclohexanol 30g |
| *Relief symptoms of bronchitis, sinusitis and similar conditions*: Inhalation: Add 1 teaspoon to a bowl of hot (not boiling) water and inhale the vapour. | |

| **MOMETASONE FUROATE (NASONEX)** | |
|---|---|
| Prep<br>Policy | Nasal spray 50 mcg/spray<br>(A*: ENT Specialists Only) |
| *Seasonal allergic or perennial rhinitis:* Intranasal: **Adult** 100mcg (2 sprays) into each nostril 1 time/day. Once symptoms controlled, reduce to 50mcg (1 spray) into each | |

| | |
|---|---|
| nostril (total dose 100 mcg) may be effective for maintenance. (Max 200 mcg per nostril/day). **Child** (3 to 11 years old) 50 mcg (1 spray) into each nostril 1 time/day. *Nasal polyposis & acute rhinosinusitis*: Intranasal: **Adult** 100mcg (2 sprays) into each nostrils 2 times/day. | |
| Notes | • Clinically significant onset of action: 12 hours after 1st dose. |

| **OXYMETAZOLINE HCL (AFRIN)** | |
|---|---|
| Prep | Nasal Spray 0.025% & 0.05% |
| *Nasal congestion. Symptomatic relief of nasal and nasopharyngeal congestion due to common cold, sinusitis, hay fever or other upper respiratory allergies:* Intranasal: **Adult & Child** (> 6 years old) 0.05% 2 to 3 sprays into each nostrils 2 times/day. **Child** (2 to 6 years old) 0.025% 2- 3 sprays into each nostril 2 times/day. **Child** (> 1 year old) 0.025% 1-2 sprays 1-2 times/day. | |
| Notes | • Do not exceed the recommended dosage<br>• Do not use > 3days (may cause rebound nasal congestion)<br>• Prolonged use not recommended |

| **SODIUM CHLORIDE 0.9%** | |
|---|---|
| Prep | Solution 500ml |
| *For use as nasal irrigation.* As directed. | |
| Admin | Bend over the sink with head turned slightly to 1 side and squirt the solution into the nostril that is higher. Aim the stream toward the back of head, NOT the top of head. Keep mouth open. The solution should flow into 1 nostril and out the other. It is fine if swallow a small amount. Once all the solution has run out of nose, blow nose gently. |
| Notes | • Use with syringe.<br>• Alternative : NeilMed® Sinus Rinse Kit available in Kedai Farmasi<br>For other indications, refer Chapter A12 Mineral Supplements |

| **TRIPROLIDINE 2.5MG/PSEUDOEPHEDRINE 60MG (ACTIFED)** | |
|---|---|
| Prep | Tablet triprolidine HCL 2.5mg/pseudoephedrine HCL 60mg<br>Syrup triprolidine HCL 1.25mg/pseudoephedrine HCL 30mg/5ml (60ml bottle) |
| *Symptomatic treatment of nasal and respiratory congestion, common cold, acute sinusitis, allergic rhinitis* : Oral: **Adult** & **Child** ( >12 years old) 1 tab 3 times/day; 2 teaspoonful (10mL) 3 times/day **Child** (6-12 years old) 1 teaspoonful (5mL) 3 times/day (2-5 years old) ½ teaspoonful (2.5mL) 3 times/day | |
| Admin |  |
| Notes | • Not recommended in children less than 2 years old |

## R O2. THROAT PREPARATIONS

| **CHLORHEXIDINE GLUCONATE (ORADEX)** | |
|---|---|
| Prep | Chlorhexidine Gluconate 0.12% (100ml) |
| *Gingivitis, mouth ulcers, sore throat, post-oral surgery.* : Mouth wash: **Adult** 15ml 2 times/day. | |
| Admin | Hold and swirl undiluted solution gently in the mouth for 30 seconds |
| Notes | • Do not swallow<br>• Following administration, do not rinse with water or other mouthwashes, brush teeth, or eat immediately |

| **FUSAFUNGINE (LOCABIOTAL)** | |
|---|---|
| Prep | 1% solution, 5mL (oral and nasal spray) |
| *Local treatment of acute inflammatory and infectious conditions of the upper respiratory tract*: Intranasal/ Oral inhalation: **Adult** 1 inhalation by mouth or through each nostril 6 times/day. **Child** 1 inhalation by mouth or through each nostril 4 times/day. | |
| Admin | Before the very first use, press 5 times on the main adapter so as to prime the pump. The bottle must be held upright between the thumb and index finger with the adapter uppermost.<br>Mouth: Place the mouth adapter (WHITE) in the mouth, close lips around it. Then press firmly and at the length on the adapter while inhaling.<br>Nasal: Fit the nasal adapter (YELLOW) on the bottle. Place into nostril. Then press firmly and at the length on the adapter while inhaling. |
| Notes | • Do not use in children < 30 months of age (risk of laryngospasm)<br>• Treatment should not exceed 10 days |

| **LIGNOCAINE HYDROCHLORIDE (XYLOCAINE VISCOUS)** | |
|---|---|
| Prep | Solution 2%, 20mg/mL |
| Topical anesthesia: **Adult** *Insertion of tubes and catheters into the stomach*: **Adult** 10-15 mL (200-300 mg) to swallow. *Irritated or inflamed mucous membranes in the mouth*: 5-15 mL (100-300 mg) to rinse around the mouth for 1 min then spit out. *Irritated or inflamed mucous membrane in the pharynx*: 5-10 mL (100-200 mg to gargle then slowly swallowed.<br>*Painful conditions in the upper GI tract*: 5-15 mL (100-300 mg lidocaine) to rapidly swallow all at once. | |
| Notes | • Max daily dose 1200 mg (60mL)<br>• For other indications, refer to chapter ***C01 Cardiac Therapy, D04 Antipruritics, incl. Antihistamines, Anesthetics Etc*** & ***N01 Anesthetics***. |

## RO3. DRUGS FOR OBSTRUCTIVE AIRWAY DISEASES

| **AMINOPHYLLINE** | |
|---|---|
| Prep | Injection 250mg/10ml |
| *Treatment of reversible bronchospasm associated with chronic bronchitis , emphysema, bronchial asthma and chronic obstructive pulmonary disease*: Intravenous : **Adult & Child**<br>Loading dose slow iv bolus 250-500mg (5mg/kg) over 20-30min. DO NOT give bolus loading dose in patients already taking oral theophylline. | |

| | |
|---|---|
| iv infusion: 0.5-0.9mcg/kg/hr. 0.5mg/kg/hr for non-smoker, 0.8-0.9mg/kg/hr for smoker, 0.3mg/kg/hr for older patients >60 years, 0.1-0.3mg/kg/hr for patient with heart failure, cirrhosis or on cimetidine, ciprofloxacin or erythromycin (check for other drug interactions); monitor blood levels if aminophylline infusion is continued for more than 24 hr (therapeutic levels 55-110mmol/l) | |
| Admin | Loading dose: dilute 1 vial 10ml (250mg) in 40ml NS to a final concentration of 5mg/ml (max 25mg/ml)<br>Iv infusion: dilute 1 vial 10ml (250mg) or 2 vials 20ml (500mg) up to 500ml NS.<br>IM not recommended |
| Notes | • Dose calculated based on ideal body weight in obese patients to avoid excessive dosage.<br>• Patients taking oral theophylline should not normally receive iv aminophylline unless plasma-theophylline concentration is available. Each 0.6mg/kg aminophylline will increase plasma-theophylline by 5.5 mmol/l<br>• Plasma-theophylline concentration for optimum response 55-110mmol/l (lower target in elderly). Contact TDM Pharmacy.<br>• Measure plasma-theophylline concentration 4-6 hours after the start of iv infusion, repeat 24 hourly if required. |

| **BECLOMETASONE DIPROPIONATE (BECOTIDE-G MDI)** | |
|---|---|
| Prep | Metered-dose Inhaler 100 mcg/puff |
| *Maintenance treatment of asthma as prophylactic therapy.* Oral inhalation: **Adult** 100-400mcg (1-4 puffs) 2 times/day. (Max 800 mcg/day) **Child** (6-12 years old) 100-200mcg 2 times/day. | |

| **BECLOMETHASONE DIPROPIONATE / FORMOTEROL FUMARATE (FOSTER) (New)** | |
|---|---|
| Prep | Metered dose Inhaler Beclomethasone Dipropionate 100mcg/ Formoterol Fumarate 6mcg per dose, 120 doses |
| Policy | A*: Respiratory specialists only. |
| Dose:<br>Regular treatment of asthma where use of combination product is appropriate (inhaled corticosteroid and long acting beta 2 agonist)<br>- in patients inadequately controlled with inhaled corticosteroid and 'as needed' inhaled short acting beta 2 agonist<br>- patients already adequately controlled on both: MDI: 1-2 inhalations twice daily. Max: 4 inhalations daily. | |
| Notes | Store in a refrigerator (2-8$^{o}$C) |

| **BUDESONIDE (PULMICORT MDI, GIONA EASYHALER DPI, RESPULES NEB)** | |
|---|---|
| Prep<br>Policy | Metered-dose Inhaler HFA 200mcg/puff , Dry-powder Inhaler Easyhaler 100mcg/puff & 200mcg/puff (A* : Respiratory Specialists & Pediatricians)<br>Nebuliser Sol. 1mg in 2mL vial |
| *Treatment of mild, moderate and severe asthma*: Oral inhalation: **Adult** Metered-dose inhaler 200-400mcg (1-2 puffs) 2 times/day (Max 1600mcg/day in 2-4 divided doses)<br>Easyhaler **Adult & child** > 12 years old 100-400 mcg 2 times/day (Max 1600mcg/day in 2 divided doses) **Child** 6-12 years old 100-200mcg 2 times/day (Max 800mcg/day in 2 divided doses) | |

| | |
|---|---|
| Nebuliser Sol In severe asthma or while reducing oral corticosteroid: **Adult** 1-2mg 2 times/day **Child** 3months-12 years old 0.5-1mg 2 times/day; maintenance dose should be lowest dose which keeps patients symptom free, usually half above doses | |
| Notes | • The dose should be adjusted until control is achieved and then titrated to the lowest dose at which effective dose of asthma is maintained<br>• Metered-dose inhaler: Above 800mcg spacer recommended to rec systemic absorption & improve lung deposition.<br>• Easyhaler: The patient should be transferred to once daily dosing (in the evening) at the same equivalent total daily dose. |

| **BUDESONIDE/ FORMOTEROL (SYMBICORT TURBUHALER)** | |
|---|---|
| Prep<br>Policy | Dry Powder Inhaler Turbohaler<br>Budesonide 160mcg/ Formoterol 4.5mcg per puff (A*: Respiratory Specialist Only (Adult and Paeds))<br>Budesonide 320mcg/Formoterol 9mcg per puff (A*: Respiratory Specialist Only (Adult) |
| *Regular treatment of asthma where use of a combination (inhaled corticosteroids and long-acting beta-2 agonists) is appropriate- patients not adequately controlled with inhaled corticosteroids and "as needed" inhaled short-acting beta-2 agonists. Symptomatic treatment of patients with severe COPD (FEV1< 50% predicted normal) and history of repeated exacerbations, who have significant symptom despite regular therapy with long-acting bronchodilators:* Oral Inhalation*:*<br>Symbicort 160/4.5 **Adult** Asthma maintenance 1 to 2 puffs 2 times/day (Max 12puffs/day for short duration). Asthma Reliever 1 puff when required (Max 6 puffs per occasion.). COPD 2 puffs 2 times/day.<br>Symbicort 320/9 **Adult** COPD 1 puff 2 times/day. | |
| Notes | • Symbicort 160/4.5 mcg & 320/9mcg not recommended for child under 12 years old. |

| **CICLESONIDE (ALVESCO)** | |
|---|---|
| Prep<br>Policy | Metered-dose Inhaler HFA 160mcg/puff (A*: Respiratory Specialist Only (Adult and Paeds) |
| *Prophylaxis of asthma*:Oral Inhalation: **Adults** 160mcg (1 puff) 1 time/day, dose can be increased to 320mcg (2 puffs) 2 times/day (Max 1280 mcg/day)**Child** 7-12 years old 80-160 mcg (1 puff) 1 time/day. | |
| Notes | • For once daily dosing, Ciclesonide is preferably administered in the evening. |

| **FORMOTEROL FUMARATE DIHYDRATE (OXIS)** | |
|---|---|
| Prep<br>Policy | Dry Powder Inhaler Turbuhaler 4.5 mcg & 9 mcg/puff (A*: Respiratory Specialist Only) |

| |
|---|
| *Add on therapy to maintenance treatment with inhaled corticosteroids for the relief of broncho-obstructive symptoms and prevention of exercise induced symptoms in asthmatics when adequate treatment with corticosteroids is not sufficient. Relief of broncho-obstructive symptoms in patients with COPD*: Oral inhalation: 4.5 mcg **Adult & Child** (>6 years old) *Asthma maintenance* 1-2 puffs 1 or 2 times/day. *Asthma reliever* 1 or 2 puffs when required. *Prevention of exercise-induced bronchoconstriction*: 2 puffs before exercise. (Max 12 puffs/day) *COPD*: 2 puffs 1 or 2 times/day. (Max dose for regular use 4 puffs). 9 mcg **Adult** *Asthma maintenance* 1-2 puffs 1 or 2 times/day. *Asthma reliever* 1 puff when required. *Prevention of exercise-induced bronchoconstriction*: 1 puff before exercise. (Max 6 puffs) |
| Notes<br>• Formoterol may be used to relief symptoms in patients already requiring long term bronchodilator therapy but NOT as a replacement for short acting beta-agonist in acute attack.<br>• Frequent use (> twice daily and/or > 2 days a week) indicates suboptimal control.<br>• Not for child < 6 years old |

| **GLYCOPYRROLATE** | |
|---|---|
| Prep | Injection 200mg/mL (1mL) |
| *Antimuscarinic agent for premedication of anaesthetic procedure, intra-operative bradycardia, with neostigmine for reversal of non-depolarising neuromuscular block,drying secretion.*<br>Intramuscular or intraveneous: **Adult** *Pre-medication and intraoperative use* 200-400mcg or 4-5mcg/kg (max 400mcg) repeated if necessary. **Child** 1 month-18 years old 4-8mcg/kg (max 200mcg).<br>*Reversal of neuromuscular block* 200mcg per 1mg of neostigmine or 5mg of pyridostigmine, or 10-15mcg/kg per 0.05mg/kg of neostigmine. **Child** 10mcg/kg per 0.05mg/kg of neostigme or equivalent dose of pyridostigmine (max 500mcg).<br>*Drying secretions* 200mcg 6 times/day. | |
| Notes | • For other indications, refer Chapter A03 Drugs For Functional Gastrointestinal Disorders<br>• Use with care for drying secretions to avoid discomfort of dry mouth |

| **INDACATEROL MALEATE (ONBREZ)** | |
|---|---|
| Prep | Capsule for inhalation 150 mcg & 300 mcg (A*: Respiratory Specialist Only) |
| *Long acting beta$_2$–agonist indicated for maintenance bronchodilator treatment of airflow obstruction in adult patients with COPD*: Oral inhalation: **Adult** 150-300 mcg 1 time/day. (Max 300mcg/day) | |
| Admin | Inhaled using Onbrez Breezhaler |
| Notes | Indacaterol maleate is NOT indicated for the treatment of asthma or acute deteriorations of COPD |

| **IPRATROPIUM BROMIDE (ATROVENT MDI, NEB)** | |
|---|---|
| Prep | Metered-dose Inhaler HFA 20mcg/puff , Nebuliser sol. 500 mcg/2mL |
| *Bronchodilator for maintenance treatment of bronchospasm associated with chronic obstructive pulmonary disease, including chronic bronchitis, asthma and emphysema.*<br>Oral inhalation: **Adult & Child** (> 6 years old) Metered-dose inhaler 40mcg (2 puffs) 3-4 times/day (Max 2400mcg (12puffs)/day **Child** (up to 6 years old) 20 mcg (1 puff) 3 times/day.<br>Nebuliser Sol *reversible airways obstruction* **Adult & Child** (>12 years old) 500mcg | |

| | |
|---|---|
| (2ml) 3-4 times/day<br>**Child** (6-12 years old) 250mcg (1mL) repeated till stable, <6 years old 100-250mcg (0.4-1mL), under medical supervision | |
| Admin | • Nebuliser solution 1mL dilute up to 2-4mL with NS, flow rate 6-8L/min. |
| Notes | • Nebuliser solution can be used every 4hrs for up to 60 hours in acute asthma attack. Treatment duration should be continued for at least 36 hours to reduce length of hospitalization.<br>• Acute angle-closure glaucoma reported with neb ipratropium, particularly when given with neb salbutamol; care needed to protect patient's eyes from nebulised drug |

| **IPRATROPIUM BROMIDE / FENOTEROL HYDROBROMIDE (BERODUAL MDI)** | |
|---|---|
| Prep | Metered-dose Inhaler HFA Ipratropium 21mcg/ fenoterol 50mcg per puff |
| *Bronchodilator for the prevention and treatment of symptoms in chronic obstructive airway disorders with reversible airflow limitation.*<br>Oral inhalation: **Adult & Child** (> 6 years old) Metered-dose inhaler 1-2 puffs 3-4 times/day (Max 8 puffs/day) | |

| **IPRATROPIUM BROMIDE/SALBUTAMOL ( COMBIVENT NEB)** | |
|---|---|
| Prep | Nebuliser Sol. Iptratropium 0.5mg/Salbutamol 2.5mg in 2.5mL vial |
| *Management of reversible bronchospasm associated with obstructive airway diseases in patients requiring more than a single bronchodilator*<br>Nebuliser Sol **Adult & Child** (>12 years old) Acute attacks 1 vial (up to 2 vials) (Max 1 vial (2.5mL) every 4 hrly). Maintenance 1 vial (2.5mL) 3-4 times/day. | |
| Admin | • Nebuliser Solution does not need dilution. Do not mix with other drugs. |
| Notes | • Not indicated for child<br>• Acute angle-closure glaucoma reported with neb ipratropium, particularly when given with neb salbutamol; care needed to protect patient's eyes from nebulised drug |

| **MOMETASONE FUROATE / FORMOTEROL FUMARATE (ZENHALE) (New)** | |
|---|---|
| Prep | Mometasone Furoate/Formoterol Fumarate 100/5mcg & 200/5mcg, 120 doses |
| Policy | A*: Respiratory specialists only. |
| Dose:<br>*Treatment of asthma, > 12 years of age and older with reversible obstructive airway disease*: MDI: 2 inhalations twice daily. | |

| **MONTELUKAST SODIUM (SINGULAIR)** | |
|---|---|
| Prep<br>Policy | Tablet 5mg & 10mg, Oral granules 4mg (A*: Respiratory, Paediatric and ENT Specialists only) |
| *Prophylaxis and chronic treatment of asthma. Allergic rhinitis* :Oral: **Adult** (>15 years old) 10 mg tablet 1 time/day **Child**(6-14 years old) 5 mg 1 time/day **Child**(1-5 years old) 4 mg 1 time/day | |
| Admin | Granules may be swallowed or mixed with cold food (eg: apple sauce) but not fluid and taken immediately. |

**R03 (missed out) DRUGS FOR OBSTRUCTIVE AIRWAY DISEASES**

| **SALBUTAMOL (VENTOLIN-G, BUVENTOL)** | |
|---|---|
| Prep Policy | Aerosol Inhaler 100mcg/dose 200 doses, Respirator Sol. 5mg/mL (10mL), Syrup 2mg/5mL (60mL), Tab 2mg, Inj 500mcg/mL, Buventol Easyhaler 200mcg/ dose (A*: Adults & Paeds Respiratory Physician, only for patient >7yo, unable to coordinate with MDI and asthma remains uncontrolled with spacer) |
| Dose:<br>*Acute bronchospasm*: Aerosol Inhaler: **Adult** 100-200mcg; **Child** 100mcg (if needed up to 200mcg). Should not exceed qid. Easyhaler: **Adult** 100-400mcg; **Child** 100-200mcg<br>*For chronic therapy*: Aerosol Inhaler: **Adult & Child** Up to 200mcg qid. Easyhaler: **Adult** 100-400mcg bd-qid (max dose: 2.4 mg / day ); **Child** 100-200mcg bd-qid (max dose: 1.2 mg / day)<br>*For prevention of allergen or exercise-induced bronchospasm*: Aerosol Inhaler: **Adult** 200mcg ; **Child** 100mcg 15 min before challenge (if required up to 200mcg). Easyhaler: **Adult** 100-400mcg; **Child** 100-200mcg<br>*For acute asthma exacerbation* : Respirator Sol: **Adult** 2.5-5 mg every 20 min for 3 doses, then 2.5-10 mg every 1- 4 hrs OR 10-15 mg/hr by continuous nebulization; **Child** 0.15 mg/kg (minimum 2.5 mg) every 20 min for 3 doses then 0.15-0.3 mg/kg (maximum 10 mg) every 1-4 hr OR 0.5 mg/kg/hr by continuous nebulization.<br>*For bronchospasm*, **Adult**: 2.5-5mg qid, up to 40mg/day in severe airway obstruction; **Child** <12yo: 2.5mg (up to 5mg if needed) qid.<br>Syrup: Adult 5-10mL (up to 20mL) tds-qid; **Child** > 12yo 5-10mL tds-qid, 6-12yo: 5mL tds-qid, 2-6 yo: 2.5-5mL tds-qid,.<br>Tab: Adult: 2-4 mg (up to 8mg) tds-qid; Child 2-6yo: 1-2mg tds-qid, 6-12yo: 2mg tds-qid.<br>*For severe bronchospasm and status asthmaticus*: *Injection:*, **Adults** IM, SC: 500mcg 4hrly prn; slow IV: 100-250mcg repeat in 15min if needed; IV infusion: Initially 5mcg/min, adjust according to response & heart rate, usual dose 3-20mcg/min (maximum generally 50 mcg/min, rarely up to 80mcg/min).<br>For management of premature labour please refer Chapter 8 on Genitourinary. | |
| Admin | IV infusion dilute 1 amp with 40mL D5% or NS to final conc. 10mcg/ml. Use within 24hrs.<br>Respirator Sol. 0.5-1mL (2.5-5mg) dilute up to 2-2.5mL of NS, give over 10min OR use high dose 2mL (10mg) undiluted over 5 min. Administer with compressed air or oxygen with gas flow 6-10 L/min. Use diluted solution within 24 hrs at room temperature and 48 hrs in fridge. |
| Notes | • On demand use should not exceed 4 times / day. Reliance on such supplementary doses or sudden increase in dose indicates deteriorating asthma.<br>• Elderly or those known to be unusually sensitive to β-adrenergic stimulant drugs use lower doses for tab & syrup preparations |

| | |
|---|---|
| | • For acute asthma in adults, if nebuliser not available may use 4-10 puff, inhaled separately using aerochamber, repeat at 10-20 min. interval. |

| **FLUTICASONE & SALMETEROL (SERETIDE)** | |
|---|---|
| Prep<br>Policy | Accuhaler Salmeterol 50mcg/Fluticasone 250mcg & 500mcg 60 doses (A*: Respiratory Physician only); Evohaler Salmeterol 25mcg/Fluticasone 50mcg & 125mcg 120 doses (A*: Pediatric & Respiratory Physician) |
| Dose:<br>*Asthma ( reversible obstructive airways disease )* Accuhaler : **Adult & Child >12yo** 1 puff (50/250 or 50/500) bd. Evohaler : **Adult & Child >12yo** 2 puff ( 25/50 or 25/125) bd; **Child ≥4yo** 2 puff (25/50) bd<br>*COPD* Accuhaler : **Adult** 1 puff bd (50/250 or 50/500). Evolaler **Adult** 2 puff bd (25/125 | |
| Admin |  |

| **TERBUTALINE ( BRICANYL-G)** | |
|---|---|
| Prep | Inj 0.5mg/ml (1mL) |
| Dose:<br>*Bronchospasm* SC/IM/Slow IV: **Adult** 250-500mcg up to 4 times/day; **Child** >2yo: 10mcg/kg, max 300mcg<br>IV infusion: 1.5-5mcg/min for 8-10hrs of 3-5mcg/mL solution, reduce in child. | |
| Admin | IV infusion dilute 1.5-2.5mg in 500mL D5% or NS to final conc. 3-5mcg/mL. |

| **MAGNESIUM SULPHATE** | |
|---|---|
| Prep | Inj 2.5gm in 5mL [49.3 % (w/v)] |
| Dose:<br>*[unlicensed indication]* Adult : IV 1.2-2gm over 20 min; Child : IV 25-75 mg/kg max 2gm<br>*For asthma in life threatening or severe exacerbation after 1 hour intensive of therapy* | |
| Admin | Administered slow IV over 2-3min. Dilute 1gm in 50mL, 2gm in 100mL NS or D5 give over 20min. |

| **THEOPHYLLINE (NUELIN)** | |
|---|---|
| Prep | Tab Slow Release 250mg, Syrup 80mg/15ml (100ml) |
| Dose:<br>*Bronchospasm :* Tab SR: **Adult**: 250 mg 2 times/day, dose can be increased/decreased by 125mg (half tab.); **Child** >2yo: up to 10mg/kg 2 times/day; Generally weight of 12-25kg: 125mg 2 times/day; Weight over : 25kg 250mg 2 times/day<br>Syrup: **Adult**: 25mL 4 times/day ; **Child** >2yo: 1mL/kg (max 25ml) 4 times/day. | |
| Admin | SR tab may be halved |

| **TIOTROPIUM BROMIDE 18MCG (SPIRIVA)** | |
|---|---|
| Prep<br>Policy | Inhalation Capsule 18mcg<br>A*: Respiratory Physicians only |
| Dose:<br>*Long term maintenance treatment of bronchospasm and dyspnoea associated w/ COPD* : **Adults** : Inhale content of 1 cap once daily. (same time of the day) | |
| Admin | Use capsule with Handihaler Device (obtain from Pharmacist). |

## R05 COUGH AND COLD PREPARATION

| **BROMHEXINE HYDROCHLORIDE (BISOLVON-G)** | |
|---|---|
| Prep | Tab 8mg, Elixir 4mg/5mL (60mL), Inj 4mg/2mL |
| Dose:<br>*Mucolytic agent* : Tab: **Adult** & >12yo : 8-16mg 3-4 times/day; **Child** <6yo: 4mg 2 times/day, 6-12yo: 8mg 2 times/day. Elixir: 6-12yo: 4mg 3 times/day. IV/IM: 4mg 2-3 times/day | |
| Admin | Administered slow IV over 2-3min |

| **MIST. EXPECTORANT STIMULANT** | |
|---|---|
| Prep | Compound mixture |
| Dose:<br>*Chesty cough* : **Adult** 10- 20 mL 3-4 times/day | |

| **PHOLCODINE LINCTUS SUGAR FREE (DURO-TUSS REGULAR)** | |
|---|---|
| Prep | Pholcodeine 15mg/15mL (90mL) |
| Dose:<br>*Unproductive irritating cough* : **Adult**: 10-15mL every 8-10hrly; **Child** (but not generally recommended) 5-14yo: 5-7.5mL every 8-10hrly, 2-5yo: 1mL per year of age every 8-10hrly. | |

## R06 ANTIHISTAMINES FOR SYSTEMIC USE

| **CHLORPHENIRAMINE MALEATE (PIRITON-G)** | |
|---|---|
| Prep | Tab 4mg, Inj 10mg/mL, Syrup 4mg/5mL (60mL) |
| Dose:<br>*Allergic rhinitis* : **Adult & child ≥ 12yo** 5mg once daily. | |
| Notes | • Not recommended in children less than 6 yrs of age<br>• May cause drowsiness, caution when driving or operating machinery<br>• May have enhanced sedative effects with alcohol and other CNS depressants |

| **DESLORATADINE (AERIUS)** | |
|---|---|
| Prep<br>Policy | Tab 5mg (A*: ENT and Respiratory Specialists only) Desloratadine 0.5mg/mL Syrup 60ml (ENT Specialists only) |
| Dose:<br>*Allergic rhinitis* : **Adult and Adolescents (≥ 12yo)** Tab : 5 orally once daily ; Syrup : **Adult & Adolescents** : 10 mL once a day ; **Child 6 – 11 yo** : 5 Ml once a day **1 – 5 yo** : 2.5 mL once a day | |

| **DIPHENHYDRAMINE EXPECTORANT (BENA-G)** |
|---|

| | |
|---|---|
| Prep Policy | Per 5ml contains Diphenhydramine 14mg, ammonia 135mg, Na citrate 57mg) |
| Dose: *Irritating cough* : **Adult**: 5-10mL 3-4 times/day ; Child : 2.5 3-4 times/day | |
| Notes | • For chesty cough-expectorant to promote expulsion of bronchial secretions.<br>• May cause drowsiness, caution when driving or operating machinery<br>• May have enhanced sedative effects with alcohol and other CNS depressants<br>• Not to be used in children less than 2 years of age |

| **DIPHENHYDRAMINE EXPECTORANT PAEDIATRIC (BENADRYL 1:2-G)** | |
|---|---|
| Prep | Per 5mL contains diphenhydramine 7mg, ammonia 67.5mg |
| Dose: *Cough and Nasal Congestion* : **Child 2 to 12 yo** : 5 – 10mL 3-4 times/day | |
| Notes | • Not to be used in children less than 2 years of age |

| **LEVOCETIRIZINE DIHCL 5MG TAB (XYZAL-G)** | |
|---|---|
| Prep | Tab 5mg |
| Dose: *Treatment of symptoms associated with allergic conditions such as seasonal allergic rhinitis (including ocular symptoms); perennial allergic rhinitis and chronic idiopathic urticaria* : **Adult and children >6years :** 5mg daily ; **Child 2 – 6 yo :** 1.25mg 2 times/day | |
| Notes | • Not to be used in children less than 2 years of age |

| **LORATADINE (CLARITYNE-G)** | |
|---|---|
| Prep | Tab 10mg & Syrup 5mg/5mL (60mL) |
| Dose: *Anithistamine & antiallergics* : **Adult & child** ≥2yo >30kg: 10mg once daily ; **Child** ≤ 30kg : 5mg once daily | |
| Notes | • Not to be used in children less than 2 years of age |

| **MECLOZINE + PYRIDOXINE (ANCOLOXIN-G)** | |
|---|---|
| Prep | Meclozine 25mg, Pyridoxine 50mg |
| Dose: *Motion Sickness* : **Adult** 1-2 tab once daily 1 hr before travelling. Repeat every 24 hours PRN; **Childn** 6-12 yr ½ -1 tab once daily. *Vertigo and vestibular disorders* : **Adult** 1-4 tab daily in divided doses. | |
| Notes | • Antiemetic treatment is best administered prophylactically at least 30 min before the emetic stimulus.<br>• Give at the beginning of a migraine attack to relieve nausea |

| **PROMETHAZINE HYDROCHLORIDE** | |
|---|---|
| Prep | Tab 25mg, Inj 50mg/2mL**,** Syrup 5mg/5mL |
| *Allergic conditions*<br>Oral: **Adult**: 25mg at night (ON) up to 2x daily; **Child: 2-5yo**: 5-15mg daily, 5-10yo: 10-25mg daily in 1-2 divided doses.<br>IM: **Adult** 25-50mg; **Child** 5-10 yo: 6.25-12.5mg. Slow IV injection in emergencies: **Adult**: 25-50mg in a concentration of not more than 25mg/mL in WFI, max 100mg | |

| | |
|---|---|
| *Insomnia*<br>Oral : **Adult** 25-50mg ON; **Child 2-5yo**: 15-20mg ON, **5-10yo**: 20-25mg ON. Maybe given as a suppository<br>*Prevention of motion sickness*<br>Oral: **Adult**: 25mg; **Child 2-5yo**: 5mg, **5-10yo**: 10mg. Doses given at night before traveling followed by same dose in the morning if needed<br>*Nausea & vomiting*<br>IM or Slow IV **Adult:** 12.5-25mg repeated at intervals not more than 4hrs, max 100mg; IM: **Child 5-10 yo**: 6.25-12.5mg. | |
| Notes | • Contraindicated in pediatric patients less than two years of age<br>• May cause drowsiness, caution when driving or operating machinery<br>• May have enhanced sedative effects with alcohol and other CNS depressants |

# CLASS S SENSORY ORGANS

## S01 OPHTALMOLOGICALS

Eye drops are instilled into the pocket formed by gently pulling down the lower eyelid and keeping eye closed for as long as possible after application, preferably 1-2 minutes.

- Eye ointments are applied similarly. Blinking helps to spread it.
- When two different eye-drop preparations are used same time of the day, leave an interval of at least 5 minutes between the two.
- Eye drops or ointment should be applied frequently in the acute phase of infection (at least 2 hourly) then reduce frequency as infection is controlled, continuing for 48 hours after healing.
- Eye ointment should be applied either at night (if eye drops used during the day) or 3-4 times (if eye ointment used alone).
- **Discard all topical eye preparations 4 weeks after opening for outpatients & 7 days after opening for inpatients.**

| **DEXAMETHASONE SODIUM PHOSPHATE (MAXIDEX)** | |
|---|---|
| Prep | Eye drop Dexamethasone 0.1% (as sodium salt) 5mL |
| Dose:<br>Apply 1-2 drops 4-6 times daily. *Severe or acute inflammation*: Every 30-60 mins, then every 2-4 hrs when favourable response is observed. Further reduction to 1 drop 3-4 times daily if sufficient to control inflammation. *Chronic inflammation*: Every 3-6hr. *Allergies or minor inflammation*: every 3-4 hrs until desired response is obtained. | |

| **DEXAMETHASONE, NEOMYCIN & POLYMYCIN B (MAXITROL)** | |
|---|---|
| Prep | Eye drop (5mL) & eye ointment (3.5g) Dexamethasone 0.1%, Neomycin 3500IU/mL & Polymycin 6000IU/mL |
| Dose:<br>Eye Drop: Apply 1-2 drops/hr in severe disease & 4-6 times daily in mild disease.<br>Eye Ointment: Apply small amount 3-4 times/day. May be used adjunctively with drops at bed time. | |

| **ACETAZOLAMIDE (DIAMOX-G)** | |
|---|---|
| Prep | Tab 250mg |
| Dose:<br>*Glaucoma*: Oral: **Adult** 0.25-1g daily in divided doses; **Child** 10-15mg per kg daily in divided doses. | |
| Notes | • Carbonic Anhydrase Inhibitor.<br>• Doses >1g/day do not produce an increased effect.<br>• NOT generally recommended for long-term use.<br>• Reduction of intraocular pressure in open angle glaucoma, secondary glaucoma, and preoperatively in angle-closure glaucoma |

| **ACETAZOLAMIDE (DIAMOX-G)** | |
|---|---|
| Prep | Powder for solution for inj 500mg |
| Dose:<br>*Glaucoma:* IV/IM: 250-1000mg daily, in divided doses for doses over 250mg daily. | |

| | |
|---|---|
| Admin | Reconstitute each vial with at least 5 mL water for injection prior to use |
| Notes | • IV route preferred as IM is painful due to alkaline pH of solution.<br>• Unused solution can be stored in fridge up to 24 hrs. |

| **ACYCLOVIR (ZOVIRAX-G)** | |
|---|---|
| Prep<br>Policy | Eye ointment 3%, 4.5g<br>A: Specialists only |
| Dose:<br>For local treatment of herpes simplex infections : apply 1 cm ointment 5 times daily, at intervals of approx. 4 hrs & continued for at least 3 days after healing. | |
| Notes | Eye ointment used in combination with systemic treatment for ophthalmic zoster. |

| **ALTEPLASE (ACTILYSE)** | |
|---|---|
| Prep<br>Policy | Eye drop (EX) 0.25mg/mL<br>A*: Ophthalmologists only |
| Dose:<br>*Uveitis:* As directed according to response. | |

| **AMPHOTERICIN B (FUNGIZONE-G)** | |
|---|---|
| Prep<br>Policy | Fortified Eye Drop (EX) 0.15% & 0.3%<br>A* : Ophthalmologists only |
| Dose:<br>As directed according to response. | |
| Notes | • Please specify strength requested when ordering<br>• For in-patient use only |

| **ATROPINE** | |
|---|---|
| Prep | Eye Drop 1% (5mL), (EX)—0.25% & 0.5% |
| Dose:<br>*Uveitis*: **Adult** 1 drop 3 times/day ; child 1 drop 3 times/day; *Refraction*: **Adult** 1 drop, repeated 1 hr before examination; **Child** 1 drop 2 times/day for 1-2 days before examination and one hr before examination | |
| Notes | • Pressure should be made over lacrimal sac occluding the lacrimal duct for 1 min after instillation<br>• For other indications, refer Chapter A03 Drugs For Functional Gastrointestinal Disorders |

| **BETAXOLOL (BETOPTIC)** | |
|---|---|
| Prep<br>Policy | Eye Drop 0.5% (5mL)<br>A: Specialists only |
| Dose: 1 drop 2 times/day | |
| Notes | Beta-blockers should not be used in patients with asthma or a history of obstructive airway disease unless no other alternative. |

| **BETAMETHASONE DISODIUM PHOSPHATE (BETNESOL-G)** | |
|---|---|
| Prep | Eye/Ear drop 0.1% (5mL) |
| Dose:<br>Eye Drops: Apply 1-2 drops every 1-2 hrs, with dosage gradually being decreased as | |

| |
|---|
| inflammation subsides.<br>Ear Drops: 2-3 drops to the ear canal every 2-3 hrs, with dosage gradually being decreased as inflammation subsides. |
| Notes • For other indications, refer to Chapter S02 Otologicals |

| **BETAMETHASONE SODIUM PHOSPHATE & NEOMYCINE SULPHATE (BETNESOL-N-G)** | |
|---|---|
| Prep | Eye drop Betamethasone 0.1% & Neomycin 0.5% (5mL) |
| Dose:<br>Eye Drops: Apply 1 drop up to 6 times/day, with dosage gradually being decreased as inflammation subsides. | |
| Notes | • For other indications, refer to Chapter S02 Otologicals |

| **BRIMONIDINE TARTRATE (ALPHAGAN P)** | |
|---|---|
| Prep | Eye drop 0.15% (5mL) |
| Policy | A*: Ophthalmologists only |
| Dose:<br>Indication: *To lower intraocular pressure in patients with open-angle glaucoma or ocular hypertension*: 1 drop 3 times/day, approximately 8hrs apart | |

| **BRINZOLAMIDE (AZOPT)** | |
|---|---|
| Prep | Eye Drop 1% (5mL) |
| Policy | A*: Ophthalmologists only |
| Dose:<br>*Treatment of elevated intraocular pressure in patients with open-angle glaucoma or ocular hypertension either as adjunct to beta blocker or alone in patients unresponsive or contraindicated with beta-blockers :* 1 drop 2-3 times/day | |
| Notes | If more than one topical ophthalmic medication being used, medicines to be administered at least 10 mins apart |

| **CEFTAZIDIME (FORTUM)** | |
|---|---|
| Prep | Fortified Eye Drop (EX) (50mg/mL) |
| Policy | A*: Ophthalmologists only |
| Dose:<br>*For severe Pseudomonas ocular infections*: 1 drop/hr for 24hrs, then every 3 hrs or as directed. | |
| Notes | For in-patient use only |

| **CHLORAMPHENICOL (CMC-G)** | |
|---|---|
| Prep | Eye drop 0.5% (5mL) Eye ointment 1% (5g) |
| Dose:<br>Eye drop: Apply 1-2 drops at least every 1-2 hrs then reduce frequency as infection is controlled and continue for 48hrs after healing. Eye ointment: Apply small amount (approx. 1cm) every 3 hrs or more within the first 48hrs. After 2 days of treatment, the interval between doses may be prolonged. | |
| Notes | For other indications, refer to chapter ***J01B Amphenicols***. |

| **CHLORHEXIDINE** |
|---|
| Prep \| Fortified eye drop (EX) 0.02% |
| Dose: *Acanthamoeba keratitis:* used as directed. |

| **CIPROFLOXACIN (CILOXAN-G)** | |
|---|---|
| Prep | Eye Drop 0.3%, (5mL) |
| Policy | A* : Specialists only |
| Dose:<br>*Corneal ulcers*: Day 1: 2 drops every 15min for 6hrs, then every 30min. Day 2: 2 drops/hr. Day 3-14: 2drops every 4 hrs.<br>*Bacterial conjunctivitis:* Day 1-2: 1-2 drops every 2 hrs. Day 3-7: 1-2 drops every 4 hrs. | |

| **CYCLOPENTOLATE (CYCLOGYL)** | |
|---|---|
| Prep | Eye drop 1% (15mL) |
| Dose:<br>*For mydriasis and cycloplegia in diagnostic procedures:*<br>**Adult** 1 drop followed by a second drop in 5 min; **Child:** 1 drop at the time of refraction, a second application 5 min later if necessary. If pretreatment needed, 1-2 drops evening prior to examination. | |
| Notes | • In manifestations of overdosage toxicity, the antidote of choice is physostigmine salicyclate. |

| **CYCLOPENTOLATE HCL + PHENYLEPHRINE (CYCLOMYDRIL)** | |
|---|---|
| Prep | Cyclopentolate HCl 0.2%, Phenylephrine HCl 1% Eye Drop (5mL) |
| Policy | A*: Ophthal clinic/ward and NICU only. Not for outpatient dispensing |
| Dose:<br>*Production of mydriasis*: 1 drop in each eye every 5-10 minutes, not exceeding 3 times. | |
| Notes | • Apply pressure over nasolacrimal sac for 2-3 mins following instillation to minimize absorption in premature and small infants. Observe infants for at least 30 min |

| **DISODIUM EDETATE (EDTA)** | |
|---|---|
| Prep | Eye drop (EX) 3%, (5mL) |
| Dose:<br>As directed according to the response. | |

| **FLUCONAZOLE (DIFLUCAN-G)** | |
|---|---|
| Prep | Eye Drop (EX) 0.2% (10mL) |
| Policy | A*: Ophthalmologists only |
| Dose:<br>As directed according to the response. | |

| **FLUORESCEIN SODIUM (FLUORESCITE/FLURETS)** | |
|---|---|
| Prep | Inj 10% (100mg/mL),(5mL), 1mg Strip |
| Dose:<br>Diagnostic angioscopy of fundus and iris vasculature: Adult : Inject rapidly into antecubital vein, test dose 0.05mL intradermally and inspected for allergy 30-60mins after; **Child:** 35mg for each 10 pounds of body weight | |
| Admin | Do not wear contact lenses during adminstration and until effects have worn off<br>Strip: Dampen its orange tip with the sterile eyewash ( water or sale) then stroke across the bulbar conjunctiva to allow for inspection |
| Notes | • Not for intrathecal use. |

| | |
|---|---|
| | • Avoid extravasation during injection.<br>• May cause temporary yellowish discoloration of the skin and urine.<br>• Strip should be used once and discarded |

| **GENTAMICIN** | |
|---|---|
| Prep<br>Policy | Fortified eye drop (EX) 14mg/mL (A: Specialists only), Eye drops 0.3% (5mL), Eye ointment 0.3% (3g) |
| Dose:<br>Eye drop: 1-2 drops to the eye(s) every 4 hrs for mild-moderate infections. In severe infections, the dosage may be increased up to 1-2 drops every hr.<br>Ointment (Eye): Apply a thin coating 2-4 times daily | |
| Notes | • Ointment to be used at night if drops used during daytime. |

| **PENICILLIN G** | |
|---|---|
| Prep | Fortified eye drop (EX) 10,000iu/mL |
| Dose:<br>Use as directed. | |

| **GENTAMICIN, BETAMETHASONE (GARASONE-G)** | |
|---|---|
| Prep | Eye drop 0.3% Gentamicin & Betamethasone 0.1% (5mL) |
| Dose:<br>Eye Drop: 1 drop to the eye(s) every 4 hrs, for mild to moderate infections. 1 drop/hr to the eye(s) for severe infections. | |

| **GENTEAL (HYPROMELLOSE 0.3%, CARBOMER 0.22%)** | |
|---|---|
| Prep<br>Policy | Eye gel 0.3% (10g)<br>A*: Ophthalmologists only |
| Dose:<br>1 drop in each eye | |
| Notes | • To be used in the clinics, wards & OTs only. |

| **HOMATROPINE HYDROBROMIDE** | |
|---|---|
| Prep | Eye drop 2% (15mL) |
| Dose:<br>*Refraction:* 1-2 drops, may be repeated in 5-10 min if necessary. *Uveitis:* 1-2 drops every 3-4 hrs. Individuals with heavily pigmented irides may require larger doses | |

| **KETOROLAC TROMETHAMINE (ACULAR)** | |
|---|---|
| Prep<br>Policy | Eye drop 0.5% (5mL)<br>A*: Ophthalmologists only |
| Dose:<br>*Relief of ocular itching*: Apply 1 drop 4 times/day. *For prophylaxis, reduction of inflammation & associated symptoms following ocular surgery*: 1 drop 3 times/day starting 24hrs pre-operatively & continue up to 3 weeks post-op. | |

| **LATANOPROST (XALATAN)** | |
|---|---|
| Prep<br>Policy | Eye drop 0.005% (2.5mL)<br>A*: Ophthalmologists only |
| Dose: | |

| | |
|---|---|
| *Glaucoma*: 1 drop in affected eye(s) daily, preferably evening. | |
| Notes | • Prostaglandin analogue<br>• Possible change of eye colour due to increased brown pigment in the iris. |

| **OXYTETRACYLINE & POLYMIXIN B (TERRAMYCIN-G)** | |
|---|---|
| Prep | Eye ointment 3.5g |
| Dose:<br>Approx 0.5 inch of ointment squeezed from tube and applied onto lower lid of affected eye 2-4 times/day. | |
| Notes | In blepharitis, scales and crusts should be removed before applying. |

| **PHENYLEPHRINE (MYDFRIN)** | |
|---|---|
| Prep | Eye drop 2.5% (5mL) |
| Dose:<br>*Vasoconstriction & Pupil Dilation*: 1 drop on upper limbus<br>*Uveitis*: Posterior Synechiae: 1 drop to upper surface of cornea and repeated as necessary, not more than 3 times<br>*Surgery*: 30-60 mins before operation | |
| Admin | Apply pressure to lacrimal sac during and for 2-3 mins following instillation to avoid excessive systemic absorption. Repeat application in 1 hr if necessary. |
| Notes | • Preceding with a suitable topical anesthetic helps to prevent pain and subsequent lacrimation. |

| **PILOCARPINE HYDROCHLORIDE** | |
|---|---|
| Prep | Eye drop 2% (15mL) |
| Dose:<br>Apply 2 drops up to 4 times daily. | |
| Notes | • Pilocarpine makes the vision darker due to miosis. Pupil sphincter spasm may cause pain on administration. Be cautious in night driving/hazardous occupations. |

| **PROPARACAINE (ALCAINE)** | |
|---|---|
| Prep | Eye drop 0.5% (15mL) |
| Dose:<br>*For procedures in which a rapid and short acting topical ophthalmic anaesthesia is indicated e.g foreign body or suture removal & other short procedures*: 1-2 drops every 5-10 mins up to 3 doses. | |
| Notes | • Only for Clinic Use. Not for Outpatient use.<br>• Alternative to Amethocaine. |

| **SODIUM CHLORIDE** | |
|---|---|
| Prep | Eye drop (EX) 0.9% & 3% (5mL) |
| Dose:<br>Apply 1-2 drops as required. | |

| | |
|---|---|
| Notes | • For other indications, refer Chapter A12 Mineral Supplements |

| **SODIUM CROMOGLYCATE (OPTICROM-G)** | |
|---|---|
| Prep | Eye drop 2% (10mL) |
| Dose:<br>Apply 1 drop 4 times/day. | |
| Notes | • Anti-inflammatory<br>• Adult/Child same dosage |

| **TIMOLOL MALEATE (TIMOPTOL-G)** | |
|---|---|
| Prep | Eye drop 0.5% (5mL) |
| Dose:<br>Apply 1 drop twice/day. | |
| Notes | • Beta Blocker. May cause blur vision after application |

| **TROPICAMIDE (MYDRIACYL)** | |
|---|---|
| Prep | Eye drop 1% (15mL) |
| Dose:<br>*Refraction*: 1-2 drops, repeat in 5mins. *Examination of fundus*: 1-2 drops, 15-20 min prior to examination. | |

| **VANCOMYCIN** | |
|---|---|
| Prep | Fortified eye drop (EX) 50mg/mL |
| Policy | A*: Ophtalmologists only, for in-patient use |
| Dose:<br>*Gram positive ocular infection*: 1-2 drops or as directed. | |

## S02 OTOLOGICALS

For administration of ear preparations, patients should be encouraged to lie down with affected ear uppermost for about 5-10 minutes after the eardrops have been applied to ensure droplet penetration to the affected skin.

- Preparations containing aminoglycosides (e.g. Gentamicin, neomycin, framycetin) or polymixins should be used cautiously if eardrum is perforated, due to an increased risk of drug-induced deafness. Prolonged use should be avoided.
- Some preparations are used as both eye/ear drops (e.g. Dexamethasone, Betamethasone)
- Warm eardrops to room temperature before use unless otherwise directed.

**Discard all anti bacterial ear preparations 4 weeks after opening for outpatients and 7 days after opening for inpatients**

| **BETAMETHASONE DISODIUM PHOSPHATE (BETNESOL-G)** | |
|---|---|
| Prep | Ear drop 0.1% (5mL) |
| Dose:<br>Ear Drops: 2-3 drops to the ear canal every 2-3 hrs, with dosage gradually being | |

| | |
|---|---|
| decreased as inflammation subsides. | |
| Notes | • For other indications, refer to Chapter S01 Ophthalmologics |

| **BETAMETHASONE SODIUM PHOSPHATE & NEOMYCINE SULPHATE (BETNESOL-N-G)** | |
|---|---|
| Prep | Ear drop Betamethasone 0.1% & Neomycin 0.5% (5mL) |
| Dose:<br>Ear Drops: 4 drops to the ear canal 3-4 times/day, with dosage gradually being decreased as inflammation subsides. | |
| Notes | • For other indications, refer to Chapter S01 Ophthalmologicals |

| **CERUMOL EAR DROP-G** | |
|---|---|
| Prep | Ear Drop: chlorobutanol 5%, paradichlorobenzene 2%, arachis oil 57.3% /11mL<br>Generic Ear Drop: paradichlorobenzene 2%, chlorbutol 5%, turpentine oil 15%, antioxidant: B.H.A. 0.05%/10mL |
| Dose:<br>*Ear wax removal*: 3-5 drops into ear twice/day. Do not use for more than 3 days<br>Generic ear drop: 5-10 drops. To remain in ear canal for 15-30 min. To use for 1 week. | |
| Notes | • Do not use on inflamed ear canal |

| **CLOTRIMAZOLE EAR DROP (CANDID-G)** | |
|---|---|
| Prep | Ear Drop 1% (15mL) |
| Dose:<br>4-5 drops, 3-4 times/day. | |
| Notes | • Indicated for otomycosis. Caution if eardrum is perforated |

| **DEXTROSE 20% IN GLYCERIN EAR DROP** | |
|---|---|
| Prep | Ear Drop (EX): 10mL |
| Dose:<br>*Removal of earwax*: Use as directed. | |

| **DEXAMETHASONE, FRAMYCETIN SULPHATE & GRAMICIDIN (SOFRADEX)** | |
|---|---|
| Prep | Eye/Ear Drop: Dexamethasone 0.05%, Framycetin Sulphate 0.5%, Gramicidin 0.005%, (8mL) |
| Dose:<br>Eye Drop: 1-2 drops up to 6 times/day. Frequency may be increased if required.<br>Ear Drop: 2-3 drops, 3-4 times/day. | |

| **GENTAMICIN** | |
|---|---|
| Prep | Ear drops 0.3% (5mL), Ear ointment 0.3% (3g) |
| Dose:<br>Ear drops: 4 drops into ear every 6 hrs.<br>Ointment (Ear): 2-4 times daily by applying thin layer on wadded stick | |
| Notes | • Ointment to be used at night if drops used during daytime. |
| **GENTAMICIN, BETAMETHASONE (GARASONE-G)** | |
| Prep | Ear drop Gentamicin 0.3% & Betamethasone 0.1% (5mL) |
| Dose:<br>Ear Drop: 3-4 drops to ear canal 3 times/day, decreasing dose as inflammation subsides | |

| **ICHTHAMMOL GLYCERINE** | |
|---|---|
| Prep | Ear Drop (EX): 10% (10mL) |
| Dose:<br>*Otitis externa*: 2-3 drops, 3-4 times/day. | |

| **OFLOXACIN OTIC SOLUTION (TARIVID-G)** | |
|---|---|
| Prep | Ear Drop: 3mg/mL (5mL) |
| Policy | A*: ENT Specialists only |
| Dose:<br>*Chronic suppurative otitis media, tympanostomy tube otorrhea and otitis externa:*<br>6-10 drops twice/day. Maintain in ear for 10 mins. Duration of treatment: 10 – 14 days. | |

| **OLIVE OIL** | |
|---|---|
| Prep | Ear Drop (EX) |
| Dose:<br>*Removal of earwax*: 2-3 drops, 3-4 times/day. | |

| **SODIUM BICARBONATE 5%** | |
|---|---|
| Prep | Ear Drop (EX): 10mL |
| Dose:<br>*Removal of earwax:* Use as directed. | |
| Notes | Fridge item |

# CLASS V. VARIOUS

## V03 ALL OTHER THERAPEUTIC PRODUCTS

| **ACETYLCYSTEINE (NAC) (PARVOLEX-G)/(FLUIMUCIL A)** | |
|---|---|
| Prep | Inj 200mg/mL (25mL), Effervescent tab 600mg |
| Policy | *a) Paracetamol overdosage b) Prevention of radiographic contrast agent induced reductions in renal functions (in ICU only).*<br>*3) As prophylaxis to prevent contrast-induced nephropathy (Nephrologists, Cardiologists and Radiologists only)*<br>(A*: For Contrast Induce Nephropathy (CIN) ordered by other specialists, pls refer to Nephrologist before Pharmacy can supply. ) |
| Dose:<br>*Paracetamol poisoning:* IV Infusion : **Adult** Initially 150mg/kg (max 16.5g) in 200mL over 15 minutes, followed by 50mg/kg (max 5.5g) in 500mL over 4 hours, then 100mg/kg (11g) in 1000mL over 16 hours; **Neonate**: Initially 150mg/kg in 3 mL/kg D5% given over 15 min, then 50mg/kg in 7mL/kg D5% over 4 hours, then 100mg/kg in 14mL/kg D5% given over 16 hours; **Child 1mo – 5yo or BW <20kg:** 150mg/kg in 3 mL/kg D5% over 15 minutes, followed by 50mg/kg in 7mL/kg D5% over 4 hours, then 100mg/kg in 14mL/kg D5% given over 16 hours; **Child 5-12 yo or BW>20kg:** Initially 150mg/kg in 100mL D5% given over 15 minutes, followed by 50mg/kg in 250mL D5% over 4 hours, then 100mg/kg in 500mL D5% given over 16 hours. *Contrast- induced nephropathy* : PO : 1.2g 2x/day, 1 day before, on the day of & 1 day after contrast media administration. IV Infusion : 150mg/kg in 500mL of NaCl solution for 30 min before contrast, followed by 50mg/kg in 500mL NaCl for 4 hours. | |
| Admin | • For PCM poisoning, dilute with D5%. Reconstituted solution is stable for 24 hours at temperature <25 °C. Give within 24 hours of ingestion.<br>• For CIN prevention, dilute with NS. ENSURE HYDRATION.<br>• The solution does not contain preservatives; discard unused portion<br>• For administration via gastric tube, dilute with water and utilized within 1 hour. |
| Notes | • For ESRF patient, CIN prevention is not necessary.<br>• CIN: no longer recommended for use prior to PCI. Instead, adequate hydration is preferred *( Levine 2011)* |

| **ACTIVATED CHARCOAL** | |
|---|---|
| Prep | Tab 250mg, Powder 5g/sachet, Granules 50g/bottle (Norit Carbomix) |
| Dose:<br>*Enhance elimination in poisoning*: PO: **Adult & child >12yo**: 50-100g (=1-2 bottles of Norit Carbomix) followed by 20g q4-6h (20g = 160mL of Norit Carbomix). **Child 1yo to <12yo**: 1g/kg (max 50g), 1-4 yo: 25g (1/4 of bottle), **<1yo**: 15-30g q4-6h. *Diarrhea*: PO: **Adult**: 2-4 tab q6-8h until diarrhea stops, **Child:** 1 – 2 tablets q6-8h. | |
| Admin | • Shake the bottle to loosen the granules. Add 350mL of water to the bottle up to the red line & shake thoroughly for 1-2 minutes to perform a final homogenous suspension (400mL). Shake the bottle again for repeated administration.<br>• To be taken on empty stomach |

| | |
|---|---|
| | • Norit Carbomix can be administered after vomiting, gastric lavage or through a stomach tube. |
| Note | • Reconstituted suspension should be stored at 2-8 $^{o}$C & consumed within 3 days from date of reconstitution.<br>• Activated charcoal will cause the feces to be black.<br>• Do not repeat charcoals if bowel sounds are absent.<br>• Charcoal may cause dehydration, hence appropriate fluid and electrolyte therapy should be given (eg ORS)<br>• Usually 1g toxin = 10g charcoal |

| **ADRENALINE ACID TARTRATE (EPINEPHRINE-G)** | |
|---|---|
| Prep | 1mg/mL Solution (1:1000), Inj 1mg/mL (1mL) |
| Policy | ADRENALINE 1:1000 SOLUTION is for use in ENT surgery ONLY. |
| *Dose:*<br>*Vasopressor (anaphylaxis shock):* IM/SC: **Adult**: 500mcg stat, then q5min prn, may be followed by IV administration of 25-50 mcg q5-15 min prn. **Child <6 yo**: 150 mcg, q5min prn. Child 6-12 yo : 300 mcg stat then q5min prn Child: 12-18yo : 500mcg stat then q5min prn. 10mcg/kg, up to a max of 300mcg, q5min prn. Slow IV: **Adult**: 100-250 mcg, may be repeated q5-15 min prn or followed by IV infusion at initial rate of 1mcg/min up to 4mcg/min, prn. **Child:** 10 mcg/kg q5-15min prn. *Bronchodilator*: SC: **Adult**: 200-500 mcg q20min – 4h prn. Dose can be increased up to max 1mg/dose. **Child:** 10mcg/kg or 300mcg/$m^2$ of body surface up to 500mcg/dose, repeated q15 min for 2 doses, then q4h prn. *Anaphylaxis*: IM/SC: **Adult**: 200-500 mcg q10-15 min prn, up to max 1mg per dose. Child: 0.01 mg/kg (max 0.3 mg) q5 min prn<br>Kindly refer relevant chapters for other indications. | |
| Admin | • General ward: Dilute 3mg (3 ampoule) to 50mL of NS or D5%, or 0.03 x BW in 50mL NS or D5%. Infusion rate 1mL/h = 1mcg/min (CENTRAL line only). Alternatively, dilute 1mg in 250 mL of D5% or NS for a final concentration of 4mcg/mL administer at an initial rate of 1mcg/min & increase to desired effects; at 20mcg/min pure alpha effects occur.<br>• IM route is the FIRST choice in management of anaphylactic shock.<br>• IV route should be reserved for extreme emergency when there's inadequacy of circulation. |
| Notes | • Store below 25 $^{o}$C. Protect from light.<br>• Incompatible with 5% sodium chloride<br>• For other indications, please refer to Chapter C01 Cardiac Therapy |

| **ANTIHAEMOPHILIC FACTORS VIII , ANTIHAEMOPHILIC FACTORS IX** | |
|---|---|
| Notes | • Refer to Pusat Darah Negara<br>• No ready stock in PPUKM |

| **ATROPINE SULPHATE (ATROPINE-G)** | |
|---|---|
| Prep | Inj 1mg/mL (1mL) |
| Dose:<br>*Arrhythmias*: IV: **Adult**: 400mcg – 1mg, repeated as needed to a total dose of 2mg.*Treatment of bradycardia asystole due to overdosage with parasympathomimetic agents*: SC, IM or IV: 1-2mg. Anticholine*sterase/organophosphate poisoning*: IM or IV: | |

| | |
|---|---|
| 1-2 mg, initial dose for mild poisoning. Repeat dose q5min up to 6mg. *Cardiopulmonary resuscitation (to block vagal activity):* 3mg as a single dose. *For gastro intestinal anticholinergic effect:* SC/IM/IV: **Adult**: 400 – 600 mcg 4 x/day. *Treatment for pre-anaesthetic medication:* SC/IM/IV: **Adult**: 300-600 mcg about 1 hour before induction. *For general uses* : SC: **Child** : 10mcg/kg every 4-6 hours (with reduced doses on hot days or for a febrile child) | |
| Admin | Administer undiluted. |
| Notes | Store below 30$^0$C. Protect from light |

| **CAFFEINE ORAL SOLUTION** | |
|---|---|
| Prep | [Caffeine citrate 2 mg = caffeine base 1 mg]<br>Caffeine citrate oral solution 20mg/mL (=10mg/mL base; 3mL), Caffeine solution 10mg/mL (EX) |
| Policy | Unregistered product |
| Dose:<br>*Apnea of prematurity*: PO: In terms of base, Loading Dose 10mg/kg, then Maintenance Dose 2.5-5mg/kg/day, up to 10mg/kg/day. | |
| Admin | • Can be swallowed by mouth or given through a feeding tube. |
| Notes | • Preservative-free (single use only) |

| **CALCIUM LEUCOVORIN (RESCUVOLIN)** | |
|---|---|
| Prep | Tab 15mg, Inj 50mg (5mL) |
| Dose:<br>*Prevention of methotrexate-induced adverse effects* (*Calcium folinate rescue therapy)*: IV injection/IV infusion/IM/PO: 15mg given 12-24hours after the start of methotrexate infusion, followed by q6h for 10 doses; *Suspected MTX overdose* IV infusion/IM/IV bolus: 15mg, repeated q6h for 24hours. *Megaloblastic anaemia due to folic acid deficiency*: IM: Up to 1mg daily. PO: **Child up to 12 yo**: 250mcg/kg od, **Child 12-18 yo**: 15mg od. *Advanced colorectal cancer*: IV bolus: 200mg/m$^2$ over a minimum of 3 min, followed by 5-FU at 370mg/m$^2$. Alternatively, administer 20mg/m$^2$ followed by 5-FU at 425mg/m$^2$. | |
| Admin | • Stability of dilution:<br>INJECTION — STABILITY AT ROOM TEMPERATURE<br>Ringers, Lactated Ringers, NS — 24 hours<br>D5% in water, D10% — 12 hours<br>D10% in NS 0.9% — 6 hours<br>• Prior to reconstitution, store at 2-8 $^o$C. Protect from light.<br>• Due to calcium content, administer IV infusion at rate <160mg/min.<br>• NOT for intrathecal (IT) use.<br>• Administer  or  |
| Notes | • Contraindicated in megaloblastic and pernicious anemia due to cyanocobalamin deficiency. |

| **CALCIUM POLYSTYRENE SULFONATE (KALIMATE - G)** | |
|---|---|
| Prep | Powder 15g |
| Dose:<br>*Hyperkalemia resulting from acute or chronic renal failure*: PO: **Adult**: 15-30g in 2-3 divided doses. **Child**: up to 1g/kg/day in divided doses, maintenance: 500mg/kg/day in divided doses 'Rectal route' – A single dose of 30g should be suspended in 100ml of water or a 2% methylcellulose solution and administered via the rectal route after warming to body temperature. It should be left in the intestinal tract for 30 minutes to 1 hour after administration. | |
| Admin | •  Each dose should be suspended in 30 -50ml of water and administered orally |

| **DEFERASIROX (EXJADE)** | |
|---|---|
| Prep | Dispersible tablet 125mg & 500mg. |
| Policy | Hematologists & Pediatric Oncologists only. |
| Dose:<br>*Paediatric thalassemia patients, transfusion dependent below 10 years old*: PO: Initially 20mg/kg od. *For patients receiving >14mL/kg/month of red blood cells (≈ >4 units/month for adults) & for reduction of iron overload*: PO: Initial dose=30mg/kg/day). *Patients receiving <7mL/kg/month of packed RBCs (≈ <2 units/month) & maintenance of body iron level*: PO: Initial dose 10mg/kg/day.<br>**Pts already well managed on treatment with Desferrioxamine (Desferral)**: PO: Initial dose: ½ of desferrioxamine. Maintenance: Dose adjustments in step of 5-10mg/kg base on pts response & therapeutic goals (maintenance or reduction or iron burden). Max dose: 30mg/kg. | |
| Admin | •  Once daily at least 30 min before food, at the same time each day. Avoid aluminum-containing antacid products.<br>• Tablets should not be chewed or swallowed whole. It should be dispersed in water, orange juice, apple juice and if necessary, re-suspend residue. Disperse dose <1g in 100mL of water, and doubled in doses >1g.<br>• Doses (in mg/kg) should be rounded to the nearest whole tablet size. |
| Notes | • Deferasirox should only be initiated if the liver iron concentration (LIC) is at least 5 mg Fe/g dry weight and serum ferritin is greater than 300 mcg.<br>• Store between 15-30 $^{o}$C. Protect from moisture.<br>• Monitor serum ferritin every month & adjust dose every 3-6months. If serum ferritin falls consistently <500mcg/L, consider interruption of treatment. |

| **DEFERIPRONE (FERRIPROX)** | |
|---|---|
| Prep | Tab 500mg |
| Policy | A* Hematologists only |
| Dose:<br>*For patients with chronic iron overload (>6years old) due to blood transfusion (transfusional haemosiderosis) when iron chelation is inadequate after usage of adequate doses of desferrioxamine (in combination with desferoxamine* : PO: Usual dose is 25mg/kg every 8h. | |

| Body weight (kg) | Dose (mg, 3x/day) | No of tablets (3x/day) | Total daily dose (mg) |
|---|---|---|---|
| 20 | 500 | 1.0 | 1500 |
| 30 | 750 | 1.5 | 2250 |
| 40 | 1000 | 2.0 | 3000 |
| 50 | 1250 | 2.5 | 3750 |
| 60 | 1500 | 3.0 | 4500 |
| 70 | 1750 | 3.5 | 5250 |
| 80 | 2000 | 4.0 | 6000 |
| 90 | 2250 | 4.5 | 6750 |

| | |
|---|---|
| Admin | • May be taken  or  |
| Notes | • Dose above 100mg/kg/day is not recommended due to increase ADR.<br>• Dose per kg should be calculated to the nearest half tablet.<br>• Store below 30 $^{o}$C |

**DESFERROXAMINE (DESFERAL)**

| | |
|---|---|
| Prep | Inj 500mg (7.5mL) |
| Policy | A* Hematologists (Adult & Pediatric) & only for treatment of :<br>1) Acute paediatric iron poisoning<br>2) Investigation or treatment of haemochromatosis<br>3) Aluminium toxicity in hemodialysis<br>4) Chronic Iron toxicity/overload in Thalasaemia patients (only if prescribed by Prof. Dr. Rahman Jamal, Dr. Zarina & Dr. Hamidah (pediatircians) and Hematologist - Dr. Leong, Dr. Teh and Dr. Fadillah) on exchange basis. |

Dose:

*Acute iron poisoning (adjunct therapy)*: IV infusion: 1000 mg may be followed by 500 mg every 4 hours for up to 2 doses; subsequent doses of 500 mg have been administered every 4-12 hours. Up to 15mg/kg/hr, reduce when situation permits (usually after 4-6 hrs) max 80mg/kg or 6g in 24hrs. *Haemochromatosis*: IM: 1g stat, IV infusion: then 15mg/kg/hr, max 6g/24hrs. *Aluminium Toxicity in Haemodialysis*: 100mg Desferrioxamine binds with 4.1mg Aluminium. *Treatment for chronic iron overload:* **Adult & Child***:* IV Infusion: Recommended to start after the first 10-20 blood transfusions or when serum ferritin is >1000ng/mL. If chelation started at age <3yo, give mean daily dose <40mg/kg & monitor growth. Monitor response by 24-hour urinary iron excretion daily & adjust dose accordingly. Once appropriate dose is established, monitor every few weeks. Alternatively, the mean daily dose maybe adjusted base on ferritin level to keep the therapeutic index below 0.0025 (mean daily dose (mg/kg of Desferal divided by serum ferritin level (mcg/L). Average dose: 20-60mg/kg/day

| Serum ferritin level (ng/mL) | Desferal dose |
|---|---|
| <2000 | 25mg/kg/day |
| 2000-3000 | 35mg/kg/day |
| >3000 | 55mg/kg/day |

*Treatment for chronic aluminium overload in end stage renal failure*: 5mg/kg/dose once weekly. *Continuous ambulatory peritoneal dialysis (CAPD) or continuous cyclic peritoneal dialysis (CCPD*): 5mg/kg/dose prior to the final exchange of the day, once

weekly (prefer intraperitoneal route).

| Post Desferrioxamine test serum aluminium level | Desferal dose |
|---|---|
| ≤300ng/mL | Slow IV infusion during the last 60min of dialysis session |
| >300ng/mL | Slow IV infusion 5 hrs prior to dialysis session |

| | |
|---|---|
| Admin | • For IV Infusion: Reconstitute with 500mg with 5mL WFI. Dilute with 150mL 0.9% saline. (Regardless of dose)<br>• For SC Infusion (for ambulant patients to use with pump): Reconstitute with 500mg with 5mL WFI. Dilute further to a final concentration of 95mg/mL. Run over 8-12 hours, 3-7 times /week<br>• For IM, (for Desferal Test) reconstitute every 500mg with 2mL WFI<br>• Slow SC infusion: over 8-12 hours (for ambulant patient), can go up to 24hours, 5-7 times/week. Not for SC bolus.<br>• IV infusion via Y-adaptor added to the blood line located near the venous site of injection.<br>• After completing the first 3 mths course of Desferal treatment, followed by a 4-week wash-out period, Desferal infusion test should be performed. Desferal can be stop if 2 successful Desferal infusion tests performed at 1 mth intervals yield serum aluminium levels <50ng/mL above baseline.<br>• IV infusion via "Y" adaptor on IV line during blood transfusion (Do not mix into the blood bag)<br>• Continuous IV infusion via implanted IV system: Indicated in patients who are incapable of continuing SC infusions & those who have cardiac problems secondary to iron overload. Care should be taken when flushing the line to avoid the sudden infusion of residual Desferal which may cause acute collapse.<br>• IM only when SC infusion is not feasible (SC infusion is more effective).<br>• For IV use: max. concentration = 10% or 500mg vial in 5mL WFI (solution must be clear). Can dilute further with NS, D5%, PD fluid such as CAPD/DPCA 2 Glucose 1.5%).<br>• For Desferal infusion test & treatment of chronic aluminium overload, 500mg vial in 5mL WFI. Syringe out the required dose and further dilute into 150mL NS for IV Infusion. For SC Infusion: Reconstitute with 500mg with 5mL WFI. Dilute further to a final concentration of 95mg/mL. Run over 8-12 hours, 3-7 times /week |
| Notes | • Dose > 50mg/kg/day is inadvisable unless intensive chelation is needed Growth retardation may result from iron overload or excessive Desferal doses.<br>• Adjuvant to iron chelation therapy: Vit C max. 200mg daily (in divided doses). Monitor cardiac function. Concomitant Vit C should NOT be given to pts with cardiac failure.<br>• Desferal Test:<br>1. Desferal test for iron overload in pts with **normal** kidney function<br>IM Desferal 500mg. Urine should be collected for a period of 6hrs and its iron content determined. Result: 1-1.5mg (18-27µmol) suggests iron overload, >1.5mg(27µmol) is pathological |

| | |
|---|---|
| | 2. Desferal infusion test for aluminium overload in **end stage renal failure**<br>Test for pts with serum aluminium >60ng/mL & serum ferritin >100ng/mL. Just before haemodialysis, take blood sample to check baseline serum aluminium level. During last 60mins of haemodialysis session, give a slow IV infusion 5mg/kg/dose. At the start of next haemodialysis (44 hrs post Desferal dose), take 2nd blood sample to check serum aluminium level. Desferal test is positive if an increase in serum aluminium above the baseline level >150ng/mL. |

**DEXTROSE**

Prep: Inj 5% (100mL &500mL), 10% & 20% (500mL), 50% (10mL & 500mL), Dextrose Monohydrous Powder 75g (Anhydrous Glucose)

Dose:

*Alcohol/ethanol poisoning*: PO**: Adult** (if blood sugar is below 60mg/dL): 25g (50mL of 50% dextrose solution) if chronic alcoholism/malnutrition is suspected, to prevent development of Wernicke's encephalopathy. Should be PRECEDED by *thiamine* IV/IM 100mg. Repeat prn; **Child**: 0.5-1g dextrose/kg as 25% dextrose solution or 10% dextrose (2-4ml/kg). *Hypoglycemia*: IV: **Adult**: 50-100mL of the D50% solution, D20% IV up to 50mL, infuse into a large vein; **Child**: Dilute to 10-25% and give 2-4mL/kg. *Neonatal hypoglycemia*: 2.5mL/kg of IV infusion 10% over 5min (if severe) followed by 5mL/kg/hr

Oral *Glucose Tolerance Test (OGTT): Diagnosis of diabetes mellitus*: PO: **Adult:** Give 75g orally to fasting patient; then measure plasma glucose concentrations according to protocol. **Child & adolescent:** 1.75g/kg (max 75g)

| **OGTT Plasma Glucose Values (mmol/L)** | | |
|---|---|---|
| **Category** | **0-hour** | **2-hour** |
| Normal | <6.1 | <7.8 |
| IFG | 6.1-6.9* | - |
| IGT | - | 7.8-11.0 |
| DM | >/= 7.0 | >/= 11.1 |
| GDM (24-28 weeks) | 5.1 | 8.5 |

ADA uses *5.6-6.9 mmol/L

*Diabetes Care. 2013;36(suppl 1):S50 (American Diabetes Association)*

Admin:
- Anhydrous powder is to be given with 200-300mL of fluid.
- Max. infusion rate < 0.5g Dextrose/kg/hr
- Do not administer within same tubing as whole blood as hemolysis can occur
- Inj containing >10% glucose can be irritant & should be given via central venous line; however, 12.5% solutions can be administered for a short period of time into peripheral line.
- Anhydrous powder:  at least 8 hours prior administration.

Notes:
- Activated charcoal does NOT appreciably reduce ethanol absorption
- Max concentration of glucose to be infused in fluid restricted children is 20-25%.
- Do not store >25$^{o}$C

| **DIMERCAPROL 5% (BAL)** | |
|---|---|
| Prep | Inj 50mg/mL, (2mL) |
| Dose:<br>*Poisoning of heavy metals*: IM: 2.5-3mg/kg q4h for 2 days, 2-4 times on 3rd day, then 1-2 times daily for 10 days or until recovery. | |
| Admin | • Deep IM only. Give 2mL of IV procaine 2% into the site to decrease pain associated with dimercaprol injection |
| Notes | • May be nephrotoxic, monitor urine.<br>• Store at 15-30°C |

| **EDROPHONIUM CHORIDE (TENSILON-G)** Unregistered product | |
|---|---|
| Prep | 10mg/mL (15mL) |
| Dose:<br>*Differential diagnosis of Myasthenia Gravis*: IV bolus: **Adult**: 2mg (0.2mL) injected 15-30sec. Needle is left in situ. If no reaction occurs after 45 sec, inject the remaining 8mg (0.8mL). **Child**: Initially 1mg (for BW<35kg) or 2mg (BW >35kg). If no reaction occurs after 45 sec, give in increment of 1mg q30-45sec up to 5mg (or 10mg in heavier patients). **Infants**: 0.5mg (0.05mL). IM: 10 mg (1mL) single dose. **Child (BW<35kg):** 2mg; **BW>35kg**: 5mg *Test for Evaluation of Treatment Requirements in Myasthenia Gravis*: IV: 1-2mg, administered 1 hour after oral intake of the drug used in treatment. *Test in Crisis:* IV: 1mg initially. If after 1 minute this dose does not impair patient, inject the remaining 1 mg. *Curare Antagonist*: *IV Bolus*: 10mg given over 30-45sec. Repeat dose when necessary. Max dose 40mg. Detection of overdosage or underdosage of cholinergic drugs:IV: **Adult & Child 12-18 yo**: 2mg (preferably just before the next dose of anticholinesterase) **Child 1 mo-12 yo**: 20mcg/kg (preferably just before the next dose of anticholinesterase) | |
| Admin | IM route is reserved for adults with inaccessible veins. |
| Notes | • If a cholinergic reaction (muscarinic side effects eg skeletal muscle fasciculations & increased muscle weakness) occurs after the 2mg (0.2mL) IV administration, the test is discontinued & administer IV atropine 0.4-0.5mg to counter this reaction. The test may be repeated after 1.5h.<br>• If cholinergic reaction occurs, retest should be done 1.5 hours later with 2mg (0.2mL) given as IM to rule out false-negative reactions.<br>• Counter severe cholinergic reactions with 1mg Atropine Injection. |

| **ESSENTIAL KETOACIDS (KETOSTERIL)** | |
|---|---|
| Prep<br>Policy | Each tab consist of 67mg of α-ketoanalogue to Isoleucine, 101mg of α ketoanalogue to Leucine, 68mg α-ketoanalogue Phenylalanine, 86mg α-ketoanalogue to Valine, 59mg α-Hydroxyanalogue to Methionine, L lysine-acetate, 53mg of L-Threonine, 23mg L-ryptophan, 38mg L Histidine, 30mg L-Tyrosine, 36mg nitrogen and 1.25 mmol or 0.05g of calcium.<br>*Nephrologists only. Max usage: 1 month supply ONLY. |
| Dose:<br>*Prevention & therapy of damages due to faulty or deficient protein metabolism in chronic renal insufficiency together with limited protein in food of 40g/day or GFR 5-15mL/min*: PO: **Adult**: 4-8 tabs every 8h | |

| | |
|---|---|
| Admin | Swallow whole<br>To prevent interference of absorption, DO NOT take with drugs that form soluble compounds with calcium (e.g. Tetracycline). |
| Notes | • Ketosteril can be given as long as the GFR is between 5-15 mL/min. |

| **FLUMAZENIL (ANEXATE-G)** | |
|---|---|
| Prep | 0.5mg/5mL (5mL) |
| *Reversal of anaesthesia/sedation*: IV Bolus: **Adult**: ;Initially 0.2mg over 15 sec. Repeat 0.1mg at 1min intervals until gain consciousness, up to a total dose of 1mg. Usual dose are 0.3-0.6mg **Child 1-17 yo :** 0.01 mg/kg (up to 0.2 mg), administered over 15 sec. If after 45-60 sec the desired level of consciousness is not obtained, a repeat dose of 0.01 mg/kg (up to 0.2 mg) can be administered every 60 sec interval (up to a max of 4 times) or to a maximum dose of 0.05 mg/kg or 1 mg (whichever is lowest). Patients should be observed for at least 2 hours after treatment with flumazenil. *In the Intensive Care Unit*: IVB: **Adult**: Initially 0.3mg. Dose maybe repeated until patient awakes or up to a total dose of 2mg. If drowsiness recurs, give IV infusion 0.1-0.4mg/h, adjusted to the desired level of arousal. | |
| Admin | • Can be given undiluted or diluted with either D5%, NS, Lactated Ringers, dextrose 0.45% or dextrose 2.5%<br>• Single use only. Discard any unused solution.<br>• Infusion solutions or syringes filled with a flumazenil solution should be discarded after 24 hours.<br>• Diluted solution is stable for 24h at 25 $^{o}$C and 2-8 $^{o}$C. |
| Notes | • If patient develop unexpected withdrawal symptoms, a slow IV injection of 5mg diazepam or midazolam should be given.<br>• There are no data on safety and efficacy of repeated flumazenil administration in children in case of resedation<br>• Store below 25 $^{o}$C. Protect from light & freezing.<br>• Each mL contains 3.7mg of sodium |

| **FULLER'S EARTH** | |
|---|---|
| Prep | Powder 60g |
| *Paraquat poisoing* : PO: **Adul**t: 100-150g every 2-4 hrs for 3 doses **Child** <12 yo: 1-2g/kg. | |
| Admin | • 100g of Fuller's Earth is mixed with 200mL water (30% suspension)<br>• Can be given |
| Notes | • Repeat until Fuller's Earth is seen in stool (normally between 4-6 hrs)<br>• Monitor calcium as Fuller's Earth can cause hypercalcemia & fecaliths |

| **ISOSULFAN BLUE DYE (PATENT BLUE V-DYE)** | |
|---|---|
| Prep | Inj 50mg/2mL (2.5%) |
| Policy | Unregistered product |
| Dose:<br>For sentinel lymph node biopsy for breast cancer/Dye for vascular marking : SC/ intravascular | |
| Admin | • SC or intravascular |

| | |
|---|---|
| Notes | • Store <30 °C. Protect from light.<br>• Do not use during pregnancy<br>• Bluish skin discolouration may occur following injection, which disappears after 24-48h |

**MESNA (UROMITEXAN-G)**

Prep: Inj 100mg/mL (4mL)

Dose:

*To prevent urothelial toxicity by cyclophosphamide or ifosfamide (oxazaphosphorine).* IV: **Adult:** 20% of oxazaphosphorine dose, first dose at time of oxazaphosphorine administration, then q4hrs for another 2 doses.

| **Hours (time)** | **0 (8h)** | **4(12h)** | **8(16h)** |
|---|---|---|---|
| Oxazaphosphorine | 40mg/kg BW | - | - |
| Uromes dose | 8mg/kg BW | 8mg/kg BW | 8mg/kg BW |

For continuous ifosfamide infusion, Mesna can be given as initial 20% at time of infusion, followed by infusion up to 100% of ifosfamide dose and continue for 6-12hrs after completion of ifosfamide infusion.

| **Hours (time)** | **0** | **24 30 36** |
|---|---|---|
| Ifosfomide dose | 5g/$m^2$ Body surface (= 125mg/kg BW) | |
| Uromes bolus dose | 1g/$m^2$ Body surface (= 25mg/kg BW) | |
| Uromes infusion | Up to 5g/$m^2$ Body surface (= 125mg/kg BW) Addition to ifosfomide infusion | Up to 2.5g/$m^2$ body surface (=62.5mg/kg BW) |

| | |
|---|---|
| Admin | • Slow IV bolus over 3-5 min. No dilution required.<br>• IV infusion (intermittent) over 15-30min: Dilute with 50mL or more of D5W or NS to a maximum final concentration of 20 mg/mL.<br>• Continuous infusion (infuse over 1-24hours): Dilute up to 1000mL or to a final concentration of >1mg/mL |
| Notes | • Diluted solutions (1-20 mg/mL) stable for 24 hrs in fridge.<br>• For dilution with D5%, concentration at 20mg/mL is stable for 48h and concentration 1mg/mL is stable for 24h at room temperature.<br>• Preserve in hermetic containers. Store vials at <25 °C |

**METHYLENE BLUE 1% INJ**

Prep: Inj 10mg/mL (1 mL)

Policy: Unregistered product

Dose:

*As dye in diagnostic procedures such as fistula detection, surgery (endoscopy) or to stain certain tissues:* IV Infusion : Depends on the organs that need to be traced, but generally for staining 5mg/kg diluted in 500mL of D% or NS and infuse over 1hr. Slow IV: **Adult & Child**: *Drug induced methemoglobinemia*: 1-2mg/kg (0.1-0.2mL/kg) administered over 5 min. Repeat dose after 1hr if required.

| | |
|---|---|
| Admin | • Dilute 5-10 mL of the 1% solution diluted to 100 to 200 mL with water for injection |

| | |
|---|---|
| | • Do not give as SC (risk of necrosis), IT (nerve damage) or intra-amniotic.<br>• Store at room temperature. |
| Notes | • Max dose: 7 mg/kg. NOT recommended in infants under 4mo<br>• Use higher volume to reduce GI disturbances and dysuria<br>• Use lean bodyweight to calculate the dose.<br>• Not for G6pd patients |

| **NALOXONE (NARCAN-G)** | |
|---|---|
| Prep | Inj 0.4mg/mL (1mL) |
| Dose:<br>*Opioids/narcotic poisoning*: IV bolus: **Adult**: 0.4 -2mg q2-3min to max 10mg if respiratory function does not improve; **Child**: 0.01mg/kg, then 0.1mg/kg if no response. *Post-operative narcotic depression*: IV: **Adult:** 0.1-0.2mg at 2-3 times interval. Repeat doses may be required within 1-2 hours interval. Child: 0.005 to 0.01mg at 2-3 min intervals. *Narcotic-induced depression*: IV/IM/SC: **Neonate:** 0.01mg/kg. Dose maybe repeated according to adult administration guideline. | |
| Admin | IV bolus may be administered undiluted or diluted. For diluted bolus administration, dilute 1mL (0.4mg) ampoule with 9mL of NS for a final concentration of 4mcg/mL<br>IV Infusion: Dilute 2mg in 500mL of NS or D5% to a final concentration of 4mcg/mL. Stable for 24h.<br>May administer SC if unable to obtain IV access. |
| Notes | • Store <30$^{o}$C. Protect from light. |

| **PENICILLAMINE (CUPRIMINE-G)** | |
|---|---|
| Prep | Cap 250mg |
| Dose:<br>*Overdose of heavy metals*: PO: **Adult**: 900-1800mg in 3-4 divided doses **Child**: 25mg/kg q6h for 5 days (max 1g)<br>For other indications, kindly refer relevant chapters. | |
| Admin | •  1.5 hours before & after taking the dose.<br>• Drink plenty of fluids |
| Notes | • Supplement with at least 40mg pyridoxine is essential.<br>• Duration of treatment depends on the urinary heavy metal excretion.<br>• Store <25 $^{o}$C. Protect from light & moisture. |

| **PRALIDOXIME CHLORIDE (PROTOPAM-G)** | |
|---|---|
| Prep | Inj 500mg/20mL |
| Dose:<br>*Organophosphorous (pesticides & chemicals) poisoning*: IV Infusion: **Adult**: 1-2g in 15-30 min infusion with 100ml of normal saline. Continuous IV infusion: 4mg/kg over 15 min followed by 3.2mg/kg/h for 3.75h (investigational). **Child**: 20-60mg/kg over 15-30 min (not to exceed 2g/dose); may repeat in 1-2 hour if muscle weakness is not relieved; then at q10-12h prn if cholinergic signs recur. IV Bolus: 1-2 g 5-10% of solution in WFI over 5-10 min. *Anticholinesterase overdose in the treatment of myasthenia gravis:* IV: 1-2g then increased by 250mg q5min if needed until response is observed. *Adjunct to atropine in treatment of organophosphorus poisoning*: SC/IM: | |

| | |
|---|---|
| Atropine 2mg, repeated every 5-60 min until patient show signs of atropine toxicity. Atropinisation may be continued with 1-2g of pralidoxime for 48 hours. IV bolus: 1-2 g in 5% - 10% WFI over 5-10 minutes, IV infusion: 1-2g as in 100mL NS for 15-30 min. Max dose: 12g in 24 hours. If muscle weakness is not relieved, repeat 1-2g dose after 1hr. | |
| Admin | 40-80mL (1-2g) diluted with NS up to 100mL or 40mL (1g) dilute with WFI up to 20mL. Injection rate ≤ 200mg/min. For pulmonary edema, give as 50mg/mL in WFI.<br>Can also be given as IM/SC.<br>Infusion rate can be as high as 500mg/h |
| Notes | • Pralidoxime can be stopped 12 hours after atropine is stopped or if butyrylcholinesterase (plasma cholinesterase) is increasing.<br>• Protect from light. Store below 28 $^{o}$C |

| **PROTAMINE SULPHATE (PROSULF)** | |
|---|---|
| Prep | Protamine Sulphate 10mg/ml (5mL) |
| Dose:<br>*Overdose of heparin inj*: Slow IV inj : **Adult**: Give over 10 minutes in doses <50mg. 1mg neutralizes 80-100 units heparin when given within 15 min, if longer, less protamine needed as heparin excretion is rapid. **Child 1mo-18yo**: 1mg if <30min has lapsed since overdose, 500-750 mcg if 30-60 min lased, 375-500 mcg if 60-120 min lapsed, 250-375 mcg if >120 min lapsed (max 50mg). *Overdose with IV infusion of heparin:* IV inj : **Adult***:* (rate <5mg/min) 25-50 mg once heparin infusion stopped. **Child 1mo-18yo**: 1mg if <30min has lapsed since overdose, 500-750 mcg if 30-60 min lased, 375-500 mcg if 60-120 min lapsed, 250-375 mcg if >120 min lapsed (max 50mg). *Overdose with SC injection of heparin*: **Adult**: 1mg neutralizes 100 units heparin; IV Inj 25-50 mg (rate < 5mg/min) and remainder as IV infusion over 8-16h. **Child** : 50-100% of total dose as IV injection and remainder of dose by IV Infusion over 8-16 hours. *Overdose of SC injection of LMWH*: with SC Low molecular weight heparin, 1mg neutralizes ~ 100 units LMWH. | |
| Admin | No further dilution is required; however it may be diluted in D5W or NS. Diluted solutions should NOT be stored as it has no preservatives.<br>If 30 minutes to 1 hour have elapsed since a heparin dose, the protamine dose should be reduced to approximately one-half (0.5 to 0.75 milligram/100 units heparin), and a further reduction to one-fourth the usual dose is necessary if more than 2 hours have elapsed |
| Notes | • 1mg of protamine sulphate neutralizes 80IU of lung heparin and 100 IU of mucous heparin.<br>• Vials should be stored between 15$^{o}$C-25$^{o}$C.<br>• In gross excess, protamine acts as an anticoagulant. |

| **PROTIRELIN (TRH Cambridge- Thyrotrophin Releasing Hormone)** | |
|---|---|
| Prep | Inj 200 mcg/mL (1mL) |
| Policy | Unregistered product |
| Dose:<br>*Assessment of thyroid function and thyroid stimulating hormone reserve*: Slow IV: **Adult**: 200 ug over at least 1 minute (up to 500 ug can be used); **Child 1mo-18yo**: | |

| | |
|---|---|
| 1mcg/kg up to a max of 200 mcg; *Diagnosis of hypopituitarism & hypothalamic disease*: Slow IV: **Adult:** 200-500mcg single dose over 1 minute; **Child: 1mo-18 yo**: 1mcg/kg (max 200mcg) as a single dose. | |
| Admin | For thyroid function assessment, plasma thyroid-stimulating hormone (TSH) levels should be measured before and 30 minutes after protirelin administration. |
| Notes | • At least 14 days interval required for repeat of tests. |

| **SEVELAMER CARBONATE (RENVELA)** | |
|---|---|
| Prep | Tab 800mg |
| Policy | Nephrologists only |

Dose: **Adult**: To control hyperphosphataemia in Chronic Kidney Disease patients not on dialysis with serum phosphorus level >/=1.78mmol/L & patients on hemodialysis/peritoneal dialysis: 800-1600mg tds.

Starting dose for patients NOT taking a phosphate binder:

| Serum Phosphorus | Renvela 800mg |
|---|---|
| >1.78 to < 2.42 mmol/L | 1 tablet 3 times day with meals |
| ≥2.42 to ≥2.91 mmol/L | 2 tablets 3 times day with meals |
| ≥2.91 mmol/L | 2 tablets 3 times a day with meals |

Switching dose from sevelamer HCL: should be prescribed on a gram to gram basis.

| | |
|---|---|
| Admin |  |
| Notes | • Protect from light. Store at 30 °C<br>• Adjust by 1 tablet /meal in 2 weeks interval as needed to target phosphorus level (1.13-1.78 mmol/L).<br>• Renvela should be used with multiple therapeutic approach; which include calcium supplement, 1,25-dihydroxy Vitamin $D_3$/analogues to control the development of renal bone disease. |

| **SODIUM PHENYLBUTYRATE** | |
|---|---|
| Prep | Powder 100g |

Dose:

*Prodrug of phenylacetate for the treatment of urea cycle disorders: Give as an adjunct to diet*: PO: **Adult & Child** BW<20kg: 450-600 mg/kg/day (max: 20g), BW >20kg: 10-13g/$m^2$/day, in divided doses with meals. *Maintenance treatment of hyperammonaemiam due to urea cycle disorders (with specialist supervision*): PO: **Neonate**: 75-150mg/kg every 6-8h **Child: 1mo-18yo**: 75-150mg/kg every 6-8h (max 20g).

| | |
|---|---|
| Admin | Mix with water<br>For children, oral dose may be mixed with fruit drinks, milk or feeds |
| Notes | • Each 100g powder contains 11.7 g of sodium<br>• Store between 15-30 °C |

| **SUGAMMADEX (BRIDION)** | |
|---|---|
| Prep | Inj 100mg/mL (2mL) |
| Policy | A* Anaesthesiologist only |

| | |
|---|---|
| Dose:<br>*ROUTINE reversal of neuromuscular blockade induced by rocuronium/vecuronium*: IV: **Adult**: 4mg/kg if recovery has reached at 1-2 post-tetanic counts (PTC). 2mg/kg is recommended if spontaneous recovery has occurred up to at least the reappearance of $T_2$; **Child (2-17 yo)**: 2mg/kg *IMMEDIATE reversal of rocuronium-induced blockade*: 16mg/kg of sugammadex is required after 3minutes after administration of 1.2mg/kg rocuronium bromide bolus. **Child**: Not recommended. | |
| Admin | Give as rapid, single bolus injection (within 10 sec) directly into a vein/IV line.<br>Bridion 100mg/mL may be diluted to 10mg/mL (with NS 0.9%) to increase accuracy of dosing in pediatric patients.<br>In exceptional occasion where re-currence of blockade post-operatively after an initial dose of 2mg/kg or 4mg/kg sugammadex, a repeat dose of 4mg/kg is recommended.<br>A waiting time of 24 hours should be given before re-administration of rocuronium or vecuronium. If neuromuscular blockade is required before the recommended waiting time has passed, a nonsteroidal neuromuscular blocking agent should be used.<br>Dose for obese patients should be based on actual body weight. |
| Notes | • Each mL of solution contains 9.7mg sodium. A dose of 23mg sodium is considered 'sodium-free'.<br>• Vials should be kept in box & protect from light. Unused vials maybe stored outside the carton up to 5 days. Store at or below 30 °C.<br>• Once open, stable for 48hours at 2-8 °C. |

| **SODUM BICARBONATE 8.4% INJ** | |
|---|---|
| Prep | Inj 8.4% 10mL & 50mL, Powder BP 1g |
| Dose:<br>*Systemic alkalizer in cardiac arrest*: IV: **Adult**: Rapid dose of 50-100mL (44.6 to 100 mEq) may be given initially and continued at a rate of 50mL (44.6 to 50 mEq) q5-10min if necessary; as indicated by arterial pH & blood gas monitoring to reverse the acidosis. PO: 325mg-2g qid. Max. daily dose <60yo =16g, >60yo=8g. **Neonate & child < 2yo**: Max. dose 8mEq/kg/day. Recommended to use 4.2% for IV administration or dilute the 8.4% solution to 0.5mEq/mL for slow administration *Metabolic acidosis*: IV: **Adult**:2-5 mEq/kg over 4-8h. *In less urgent forms of metabolic acidosis*: IV: **Adult & older children**:2-5 mEq/kg over 4-8hours; *Urine alkalization*: PO: **Adult**: 3g in water q2hrly until urine PH >7, maintenance 5-10g od. | |
| Admin | Undiluted sodium bicarbonate 8.4% can be used as IV injection during cardiac arrest. Otherwise dilute to 1.5% NS or D5 |
| Notes | • Contains no preservatives or buffer and intended as single use injection. Discard any unused portion.<br>• Each 1mL of $NaHCO_3$ = 84mg of $NaHCO_3$ = 1mEq of $Na^+$ and 1mEq of $HCO_3^-$<br>• Store <25°C.Solutions should not be boiled/heated as it may decompose and converted to carbonate.<br>• Sodium bicarbonate 8.4% = 1mEq/mL (1mmol/mL, each 1 mL contain 1mmol sodium ion & 1 mmoL bicarbonate ion<br>• 1 g Sodium bicarbonate = 11.9mEq Sodium & 11.9mEq Bicarbonate |

| **SULODEXIDE (VESSEL DUE F)** | |
|---|---|
| Prep | Cap 250 LSU, Inj 600 LSU |
| Policy | A*: Nephrologists only. Max usage : RM50,000.00 per year (FOR BOTH) |
| *Adjunctive therapy for further reduction in proteinuria in patients with diabetic nephropathy not responding /remitting or not tolerating to other standard therapy*. **Adult**: PO : 2 cap bd<br>*Vascular pathologies w/ thrombotic risk*. **Adult**: IV/IM: 1 ampoule od for 15-20 days, followed by PO: 1 cap bd for 30-40 days. | |
| Admin |  <br>Repeat complete cycle at least twice a year |
| Notes | • (Conversion : 1mg = 10 LSU)<br>• Store below 30 °C<br>• Antidote for overdose of sulodexide: 3mL = 30mg of 1% protamine sulphate inj can be given |

| **THIAMINE HCL** | |
|---|---|
| Prep | Tab 10mg, Inj 100mg/mL (1mL) |
| Policy | Inj is unregistered product |
| Dose:<br>*Acute withdrawal syndrome*: 100mg/25g glucose concurrently with IV Glucose.<br>Kindly refer relevant chapters for other indications. | |
| Admin | • Can be given as slow IV or IM.<br>• If taken orally,  <br>• Thiamine administration should PRECEDE intravenous glucose bolus as glucose load can otherwise induce Wernicke's encephalopathy. |
| Notes | • Protect from light. |

| **TUBERCULIN Purified Protein Derivative (PPD)** | |
|---|---|
| Prep | Inj 2 T.U/0.1 mL (1.5mL) |
| Dose:<br>*Skin Mantoux test*: Intradermally: 0.1mL of 2 T.U | |
| Admin | Inject intradermally in the middle third of the forearm, as reactions are weaker near the wrist and the elbow-joint. |
| Notes | • 0.1 mL of 2 T.U contains 0.04mcg of *Mycobacterium tuberculosis*<br>• Positive reaction is defined as having a diameter of >6mm 48-72 hours after the injection. Immunosuppressed individuals may have <6mm diameter as they have lower sensitivity to tuberculin.<br>• Store at 2-8 °C. Protect from light.<br>• After removal of the first dose, the capped vial must be stored between 2-8 °C. Stability after used is 24 hours. |

## V07 ALL OTHER NON-THERAPEUTIC PRODUCTS

| **AMINO ACID HYDROCHLORIDE DETERGENT DISINFECTANT 5L** | |
|---|---|
| Prep & Policy | N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine:5.1%, Didecyldimethylammonium chloride : 2.5% |
| Dilution:<br>*Cleaning and disinfection of floors, walls, equipment and medical devices* : 0.25% ie 20mL for 8 litres of cold or tepid water , do not rinse surfaces | |
| Admin | External use only |

| **ANIOXYDE 1000 HIGH LEVEL DISINFECTANT/COLD STERILANT SOLUTION 5L (7 DAYS/50 CYCLES)** | |
|---|---|
| Prep & Policy | Anioxyde 1000 high level disinfectant/cold sterilant solution 5L (7 days/50 cycles) |
| Indication:<br>*Control of peracetic acid rate reacting in a cold sterilant solution of Anioxyde 1000*<br>Direction for use:<br>Use the test strips to check the bath activity: At the start of a session or when restarting after an interruption. Every 4 hrs of consecutive activity ( > 10 endoscopes/day). During periods of high activity or in special conditions ( increase in temperature)<br>Totally soak the reactive part of strip in the solution to be tested for 1 second.<br>Remove the solution in excess by quick shaking of strip.<br>Read results in 10 seconds after soaking. Do not read the result after 15 seconds. | |
| Admin | External use only |
| Notes | • The yellow colour of the Anioxyde 1000 bath indicateds that the Activator/Generator mixture has just been made. IT DOES NOT indicate the presence of peracetic acid. ONLY THE CHANGE IN COLOUR on the strip should be taken into account.<br>• Coloured bath ( yellow) or not + change in colour ( balck) of strip = compliant bath that contains more than 900ppm of peracetic acid. |

| **CITROSTERIL DISINFECTANT 5L** | |
|---|---|
| Prep | Contains citric acid-1-hydrate, lactic acid,malic acid |
| Indication for use:<br>*For cleaning, decalcification and heat disinfection of haemodialysis equipment with proportional mixing system..* | |
| Admin | External use only |
| Notes | • Avoid contact with eyes |

| **DIALOX DISINFECTANT 5L (FOR GAMBRO MOBILE R.O)** | |
|---|---|
| Prep | Contains hydrogen peroxide, acetic acid,peracetic acid |
| Indication for use:<br>*Disinfectant and decalcification agent for haemodialysis equipment* | |
| Admin | External use only |
| Notes | • Avoid contact with eyes |

| **OMNICIDE DISINFECTANT CLEANER / SANITIZER 5L** | |
|---|---|
| Prep | Contains less than 5% nonionic surfactant , EDTA, cationic surfactant |
| Indication for use:<br>*Disinfectant of hard,non=porous surfaces, no dilution is needed* | |
| Admin | External use only |
| Notes | • Irritating to skin<br>• Avoid contact with eyes |

| **ORTHO-PHTHALALDEHYDE 0.55% SOLUTION 5L (CIDEX OPA)** |
|---|
| Prep: 5L |
| Dose:<br>*High level disinfectant for reprocessing heat sensitive medical devices:* Disinfectant: Immerse device completely in Cidex OPA for a minimum of 5 minutes at 20 or higher. Remove the device from the solution and rinse thoroughly. |

| **QUATERNARY AMMONIUM PROPIONATE DETERGENT DISINFECTANT SPRAY 750ML** |
|---|
| Prep: 750mL<br>Policy: General ICU, Renal ICU, NICU and Ward 4H (Orthopaedic Female). |
| Dose:<br>*Disinfectant, detergent foam designed for cleaning & disinfection of surfaces:* Disinfectant |

**SODIUM DI'CYANURATE TAB. 0.5G & 2.5g**

Prep: 0.5g & 2.5g

Dose:
*Effervescent chlorine disinfectant tablets:* Disinfectant

Admin

| Application Table | Chlorine (ppm) | Method |
|---|---|---|
| **Body waste/discharges to ensure proper disposal** | | |
| Spillage of blood | 10 000 | Swab/wipe |
| Disposal of body wastes (blood, sputum, urine, faeces)<br>Disposal of needles, blades, gauze, used dressing<br>Disposal of lab wastes, containers, glassware, slides | 5000 | Soak |
| **Contaminated objects for reuse** | | |
| Instruments soiled with blood | 1000 | Soak for 20 mins |
| Dirty surfaces of objects (bedpan, urinal, mop) | | Soak/rinse |
| Infected linens, mattress, pillow covers | | Soak for 30 mins |
| Gowns soiled with blood | | Soak for 30 mins |
| Suction bottles & tubings | | Soak/rinse |
| Nebulizers, mouthpieces, respirators, ventilator tubings | | Wipe/soak/rinse |

| | | | |
|---|---|---|---|
| | Dental impression/prosthetic devices | | Soak for 20 mins |
| | Baby feeding bottles | 150 | Soak for 30 mins |
| | **General environment disinfection** | | |
| | General environment, floor, furniture, bed | 150 | Mop/wipe |
| | Clean surfaces e.g. trolley tops | | Wipe |
| | Sink, wash basin, soap dispenser, bath , toilet bowl | | Mop/wipe |

| **SOLCART B FOR BICARBONATE DIALYSIS POWDER** | |
|---|---|
| Prep | 650G |
| Dose:<br>*Sodium bicarbonate cartridge for use with the Dialog$^{+}$ Hemodialysis System* | |

| **SYRUP SIMPLEX BP** | |
|---|---|
| Prep | 3.6L |
| Dose:<br>*Sweetening agent & vehicle in pharmaceutical oral liquid preparations:* Oral | |

| **TALCUM POWDER (STERILE)** | |
|---|---|
| Prep | 5g, 10g powder (autoclaved) |
| Dose:<br>*As a sclerosant after drainage of malignant pleural effusion, recurrent spontaneous pneumothorax:* Powder: Administered into the pleural cavity as a slurry or by aerosol. 5g for pleural effusion & 2g for recurrent spontaneous pneumothorax. | |

| **WATER FOR INJECTION** | |
|---|---|
| Prep | 10mL & 500mL |
| Dose:<br>*For reconstitution of inj & fluid replacement:* IV Infusion | |

| **WATER FOR IRRIGATION** | |
|---|---|
| Prep | 500mL & 1000mL |
| Dose:<br>*For external irrigation only. Not for injection:* Irrigation | |